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ABSTRACT OF

The Morison Lectures

ON

EPILEPSY.

Delivered before the Royal College of Physicians of Edinburgh on Feb. 28th and March 2nd and 4th, 1910.

BY WILLIAM ALDREN TURNER, M.D. EDIN., F.R.C.P. LOND.,

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LECTURE I.

Delivered on Feb. 28th.

THE PROBLEM OF EPILEPSY.

GENTLEMEN,—The term epilepsy refers to a symptom; it is the clinical expression of a group of diseases which may be to a large extent differentiated from each other. They may be divided into four primary divisions: (1) the organic epilepsies; (2) the early epilepsies; (3) the late epilepsies; and (4) idiopathic epilepsy.

1. *The organic epilepsies.*—Under this heading are included (*a*) those forms of epilepsy arising from traumatic lesions of the skull, brain, or membranes; and (*b*) those which are associated with or sequential to focal organic disease of the brain, such as tumour or thrombosis.

2. *The early epilepsies:* or the epilepsies of infancy and early childhood.—These cases have been placed in a subdivision by themselves, although it is admitted that they may in many instances be difficult to distinguish from idiopathic epilepsy. Moreover, the two tend to fuse and overlap in later childhood. They are, however, tentatively taken out of the great group of genuine epilepsies owing to the marked degree of mental impairment, amounting to imbecility or even idiocy, found in most cases.

Many cases also are attributable to focal lesions—encephalitis, hæmorrhage, and thrombosis. A sub-variety is that form of epilepsy which is found with infantile cerebral hemiplegia. I have elsewhere shown that the greatest degrees of dementia are found amongst those epileptics in whom the disease commenced before the fifth year of age, a group of epileptics also in whom structural stigmata of degeneration are most frequent.

3. *The late epilepsies.*—Under this heading are included (*a*) the epilepsy associated with degenerative cardio-vascular disease; (*b*) the intoxication epilepsies, of which alcoholic epilepsy is the most common; (*c*) the epilepsy which occurs in the late stages of some dementing psychoses; and (*d*) epilepsy which arises in eclamptic conditions, such as uræmia, puerperal eclampsia, &c. Puerperal eclampsia is in many cases the acute onset of epilepsy which is continued in a chronic form by the recurrence of ordinary epileptic seizures, of the major or minor type.

4. *Idiopathic epilepsy.*—When these epilepsies have been eliminated there still remains a large group, which has received the name of genuine, essential, or idiopathic epilepsy—a malady arising about the period of puberty, usually without any tangible or ascertainable cause.

IDIOPATHIC EPILEPSY.

Idiopathic or genuine epilepsy may be defined as a chronic disease of the brain, characterised by the recurrence of seizures in which interference with consciousness is an essential feature, associated either with convulsions or transient psychical phenomena, occurring usually in persons with a hereditary neuropathic endowment, and eventually leading to more or less permanent mental deficiency. This definition embraces the manifold symptoms usually included under the term epilepsy, such as transient jerks or jumps (*petit mal moteur*), aura sensations, incomplete attacks, psychical epilepsy, automatism, the classical fit, and the psychical epileptic equivalents.

The sole feature necessary to establish the existence of epilepsy is sudden, brief loss or impairment of consciousness. Very characteristic of the epileptic attack is the temporary mental confusion which succeeds the loss of consciousness. During this phase semi-purposive actions or automatism may be observed.

In any discussion upon the problem, or nature, of epilepsy the two primary elements of the disease requiring consideration are: (1) the convulsive element; and (2) the psychical element.

1. THE CONVULSIVE ELEMENT.

The chief characteristic symptom of epilepsy is the periodic occurrence of attacks of loss or impairment of consciousness, sometimes accompanied by convulsions.

It has been laid down as a general principle, notably by Herpin in his classical, but little known, work upon minor epilepsy,[1] that the symptoms occurring during the intervals of the major seizures of this disease, such as cramps, "jumps," twitchings, spasms, partial convulsions, vertiginous attacks, cephalic sensations, visual hallucinations, or other subjective phenomena, are the major or complete seizures reduced to their initiatory symptoms or sensations. All gradations of seizures may therefore be found in the same person, from the aura as the sole representative of the fit, through the incomplete attack to the fully developed epileptic fit, with the phase of tonic spasm, clonic convulsion, and the after stage of coma.

All epileptics, whose major fits commence with a definite and constant warning—whether referred to the abdomen, the chest, the limbs, the head, or the special senses—have minor attacks consisting solely of the aura, or of the aura with a further development towards the complete attack. In other cases the warning is of a psychical character. Attacks of this kind are not uncommonly associated with what Hughlings Jackson has called "the dreamy state."[2] This may be of the nature of reminiscence, or it may consist of a sense of unreality, as if surroundings were unfamiliar, or of a sensation that what is happening has been previously experienced.

In about two-thirds of all epileptics, there is no warning of the onset of the seizure, a sudden and complete loss of consciousness occurring either immediately before, or at the same time as, the onset of the tonic phase of the complete major fit. The minor attacks occurring in the intervals of the complete fits in this group of epileptics are common—as there is no warning, there is, of course, no incomplete minor seizure without interference with consciousness. The varieties of the minor seizures here form common types of epileptic fits.

A not unusual type of fit is temporary blurring of consciousness with muscular relaxation, so that the patient drops what he is holding, or conversation is momentarily suspended, or he falls. In other cases slight and partial convulsion may be observed. Some cases of this type present features of a purely psychical character, the movements noticed during the attack being not convulsive, but automatic or semi-purposive.

From these few remarks upon the general outlines of epileptic attacks, especially of the minor type, it may be deduced (1) that some fits consist of the aura or warning alone and are unattended by loss or even impairment of consciousness; (2) that others consist of the warning sensation with a development towards the more complete fit—these present a certain march of subjective symptoms and terminate with, or without, some blurring or obscuration of consciousness; and (3) others present the complete or major type of fit.

If there is no warning the minor attacks consist of lapses of memory, giddiness, falls, and "sensations," with or without slight spasm or convulsions, but always with some interference with consciousness.

Although the common clinical type of epilepsy is the combined type or that in which minor or major seizures are found in the same person, yet other types or clinical groupings of fits are by no means unusual. Thus we find groupings limited to the major or the minor type of seizure respectively. There is also a type in which major or minor seizures occur in series of a score or more from time to time (serial epilepsy). Again, there is the acute form of epilepsy, known as the status epilepticus, in which one fit follows another so closely that the after stage of coma gives place to the succeeding fit, without any return to consciousness.

2. THE PSYCHICAL ELEMENT.

The recognition of the psychical element as a constituent

[1] Les Accès Incompletes d'Epilepsie, Paris, 1857.
[2] Hughlings Jackson: Brain, 1898, 1899.

feature of epilepsy has materially widened the range of epileptic manifestations. Some writers have gone as far as to relegate the convulsive element to a subsidiary position, and to place "periodic fluctuations of the psychical equilibrium" as the outstanding feature of the disease. It is now generally accepted that certain paroxysmal psychical symptoms occurring in epileptics may replace from time to time the convulsive seizures, and form what are known as psychical epileptic equivalents, and that transient disturbances of consciousness of a psychical character may be the sole evidence of an epileptic attack (psychical epilepsy).

The psychical element in epilepsy may be studied under three conditions: (*a*) In the epileptic temperament; (*b*) in the paroxysmal symptoms preceding, succeeding, or replacing the convulsions; (*c*) in the permanent dementia.

(*a*) *The epileptic temperament* has many features common to epilepsy and the several forms of mental deficiency.

(*b*) *The paroxysmal psychical phenomena* of epilepsy stand in three ways to the convulsive attacks. Some are found as prodromal symptoms of the seizures, others as immediate sequelæ, and a third group, occurring in the interparoxysmal periods, are believed to replace the convulsions, and are in consequence known as psychical epileptic equivalents. The paroxysmal psychical symptoms are grouped under the general term of "epileptic insanity."

The pre-paroxysmal mental symptoms are in reality prolonged or modified phases of the prodromal stage. They consist of irritability, apprehensions, feelings of unreality, lethargy, and occasionally hallucinations. They may precede the fit by one or more days. On the other hand, they may consist of sudden impulsions, the patient doing some strange things and then suddenly falling down in a fit.

The post-paroxysmal mental symptoms are the immediate sequelæ of either single seizures or, more commonly, of serial outbursts of the status epilepticus. They are inseparable from the convulsions and disappear after a longer or shorter interval, but give in some instances a decidedly psychical character to the paroxysms. The most frequently observed are: (1) acute amentia or stupor, resolving slowly during the course of days, or even weeks; (2) acute mania, or excitement, of shorter duration than the preceding, but often of intense severity—minor varieties of this are seen in phases of talkativeness, tiresomeness, and exhilaration of spirits; (3) transitory delusional states; and (4) automatism. Most minor fits are succeeded by some kind of automatic action, such as "exhibition," wandering, or confusion of action.

The psychical equivalents are especially interesting forms of epileptic psychical phenomena. Especially characteristic of these is their occurrence in the same person with the classical types of epilepsy, more especially at the catamenial epochs in women, and a certain uniformity in the type of the attack, recurring paroxysms reproducing the features of former attacks. In any particular case the psychical equivalents usually correspond to those mental phases which are directly associated with the convulsions.

Psychical Epilepsy.

There is no doubt that a form of genuine epilepsy exists, characterised by short seizures of a purely psychical type. These attacks consist of simple automatic actions performed by the patient in an unconscious state: the face is usually pale and has a fixed, staring expression. There is no subsequent recollection of what has occurred during the seizure, although in some cases there would appear to be a state of subconsciousness, in which the patient may hear vaguely what is said, but yet be unable to reply to questions. The attacks are characterised by sudden onset, and usually occur without warning. They are of short duration and recovery is rapid. They may be regarded as constituting one of the types of minor epilepsy, but differing from the common petit mal seizures by the purely psychical character of the fit. In the ordinary forms of minor epilepsy, the stage of automatic action is preceded by transient motor spasm or convulsion.

3. EPILEPTIC DEMENTIA.

In addition to the paroxysmal psychical symptoms there is observed in all cases of confirmed or old-standing epilepsy an almost constant and characteristic interparoxysmal mental state, presenting features of great uniformity. The general features of this mental condition, or epileptic dementia, consist of all grades of mental deficiency from a defect of memory, more especially for recent events, up to pronounced dementia. This should be regarded as an integral part of the confirmed disease, modified to some extent by the duration, the frequency, and the character of the fits. The existence of this dementia is of value in the differential diagnosis of epilepsy from some closely allied conditions.

COURSE.

Epilepsy is most commonly found in a chronic form, with periodic seizures recurring through many years, sometimes a life-time, but in some cases showing prolonged and remarkable remissions. The frequency of the seizures may vary from one, two, or three, or even less in a year, to as many as a score or more in 24 hours. A cure occurs in a small proportion of cases, estimated at from 10 to 12 per cent. These are cases in which the seizures are of infrequent occurrence, in which there is little or no mental impairment, and in which the bromide salts are well borne.

PATHOLOGICAL ANATOMY.

It is difficult to obtain post-mortem examinations on recent cases of the disease or on those cases characterised by seizures occurring only at long intervals, but it would appear as if genuine epilepsy was a disease which in its early stages was unassociated with any obvious structural changes in the brain or central nervous system. In old-standing cases, however, the morbid changes found after death are well recognised and have been described by numerous writers. Dr. John Turner has found atrophy and sclerosis of some part of the central nervous system in considerably more than 50 per cent. of the cases of idiopathic epilepsy. Alzheimer found acute and chronic changes in 60 per cent. of all cases examined.

In the *nerve cells* the changes vary from slight degrees of chromatolysis to advanced atrophic degeneration. The extent of the change would seem to depend largely, if not entirely, upon the mode of death. Certain nerve cells, showing well-marked eccentration of the nucleus, which is usually of a globose character, are regarded as being typical of low-grade brains and to represent an embryonic type of nerve cell. (John Turner.)

The *vascular changes* consist of dilatation and atrophy of the blood-vessel walls, perivascular infiltrations, and punctiform hæmorrhages. The lymph spaces are dilated and contain a foam-like exudate. Hyaline spheres or lobulated bodies are seen lying free in the lumen of the smaller vessels and capillaries, and sometimes large hyaline masses form casts of the vessels in which they lie.

Neuroglia.—There is an increase of the glial tissue, especially that situated in the outer layers of the cortex, and of the cornu Ammonis.

The *meninges* generally show slight fibroid thickening and a moderate leucocyte infiltration. Rupture of the vessels with extravasation of red blood corpuscles and a delicate unorganised foam-like exudate are always present.

The lesions found in the brains of epileptics are of wide distribution. The cerebellar membranes are often more affected than the cerebral. The glial changes are distributed unevenly over the whole surface of the cerebrum, but some regions are more especially involved—viz., the frontal and occipital regions, the cornu Ammonis, and the gyri around the fissure of Rolando.

It is now the generally accepted view that the changes just described are the effects, and not the cause, of the seizures. The acute or cell changes vary according to the manner of death, and the chronic or glial changes are dependent to a great degree upon the duration and severity of the disease. The most acute changes are found in the brains of persons dying in the status epilepticus (Alzheimer), and the most pronounced degrees of gliosis are observed in the brains of those in whom the disease was of long standing and characterised by the severer grades of mental deficiency and dementia. Frequent repetition of epileptic fits brings about destructive changes in the nerve cells and fibres, whose place is taken by proliferated neuroglial elements.

THE PREDISPOSING CAUSES OF EPILEPSY.

A statistical investigation of a large number of cases of epilepsy shows about an equal percentage without as with a history of ancestral neuropathic disorders. Even allowing about 20 per cent. for those in whom the family history may be either unknown, forgotten, or withheld, there still remain about 30 per cent. of all cases of epilepsy in which a history of family predisposition cannot be obtained.

Some explanation ought, therefore, to be forthcoming of so large a proportion of cases in which, on careful inquiry, no obvious heredity is obtainable. The existence of epilepsy in some of these cases may be to some extent explained by the presence of a diathesis, infective disorder or intoxication, in one or other parent at the period of conception. It is not unlikely also that the presence of some symptom, classified under the general term of "nervousness," may be of great importance in the genesis of epilepsy. Inquiries ought to be made into the question of parental neurasthenia, hysteria, migraine, or periodic headache, psychasthenia, obsessions, tics, chorea, and in particular those epileptoid symptoms which will be referred to in the account of the borderline of epilepsy. These are symptoms which do not, as a rule, strike the patient or his friends as of any importance in the causation of fits, nor does the physician usually direct his attention towards them.

A further explanation of some of these cases is to be found in the presence of small foci of encephalitis or of thrombosis occurring in infancy or early childhood. In many of these cases resolution has so largely taken place that the only permanent defect is some impairment in the finer movements of one or other hand. Defects of this character should always be looked for in those cases in which no clear predisposition is ascertained, or where the absence of well-marked "stigmata" suggests that a hereditary influence is not obtrusive.

My earlier figures, taken from 676 cases of epilepsy, reveal the fact that the most common predisposing cause of epilepsy is ancestral epilepsy. In a further series of 214 cases, in which parental alcoholism as a predisposing influence was especially enquired into, the same conclusions were arrived at—viz., that ancestral alcoholism was a relatively minor factor compared with ancestral epilepsy in the causation of the disease.

	First Series of 676 Cases of Epilepsy.		*Second Series.*	
No heredity known ...	330 or 49·0 per cent.	.....	106 or 49·5 per cent.	
Epilepsy	252 ,, 37·2	,, ...	81 ,, 37·8	,,
Insanity	37 ,, 5·4	,, ...	7 ,, 3·2	,,
Alcoholism	21 ,, 3·1	,, ...	15 ,, 7	,,
Other disorders	36 ,, 5·3	,, ...	5 ,, 2·3	,,
Totals ...	676 ,, 100	,, ...	214 ,, 99·8	,,

STIGMATA OF DEGENERATION.

Evidence of a family neuropathic tendency may be found in what are known as "stigmata" of degeneration. In epilepsy, as in the other degenerative neuroses, stigmata of degeneration are present, and have received considerable attention. In addition to the cranial asymmetry which Lasègue[3] considered to be constant in true epilepsy, Féré[4] has called attention to the frequency of cranio-facial asymmetry amongst epileptics.

Among other features of a degenerative character, the configuration of the hard palate deserves special attention. This has been the subject of much investigation and discussion, and its study and relation to the several degenerative neuroses is associated with the names, more especially in this country, of Langdon-Down and Clouston.[5] Deformities of the ears—and abnormal setting of the teeth—have been regarded as important structural stigmata of degeneration.

In addition to the above-mentioned stigmata, Féré has also drawn attention to and described various asymmetries of the thorax and pelvis, unequal length and size of the limbs, and syndactylism, found in epileptics. In whatever form they are found, it has to be borne in mind that stigmata of degeneration are deviations from the normal and occur in those who are subjects of a hereditary degenerative predisposition.

Of the two quinquennial periods in which the onset of epilepsy is more common, that from birth to 5 years of age is the most fruitful in stigmata. It is during this period that the growth and development of the brain are most active, and it is during this period, as Clouston has shown, that other degenerative neuroses and psychoses develop, such as stammering, backwardness in walking and talking, delayed dentition, and some forms of idiocy and imbecility.

Amongst epileptics, in whom the disease commences about the time of puberty, a considerable number present no obvious structural stigmata, even when parental epilepsy was given as the probable cause of the disease. The most common stigma observed in epileptics is a deficiency in the physical development. Many epileptics are, on the other hand, physically well formed.

The general conclusions which may be made from a study of the stigmata of degeneration in epilepsy are:—1. That the absence of a family neuropathic history is of little account in face of well-marked structural signs of degeneration. 2. That the early epilepsies, or those commencing under five years of age, show not only the most marked mental defects, but also are the most prone to stigmata. 3. That stigmata are most common in that type of epilepsy, known as the combined seizure type, which is the most intractable and most dementing form of epilepsy. 4. That stigmata are common in those cases of the confirmed disease which go on to marked dementia. Degenerative stigmata in epilepsy are, therefore, factors of great importance. The future course of the malady may be gauged, to some extent, by their study.

AGE OF ONSET.

The age at which epilepsy arises is an important factor in the study of the predisposing causes. Although there is no age-period which may be regarded as entirely exempt, there are certain age-periods during which the onset of epilepsy is more common.

The first epoch is from birth to 5 or 6 years, or that period coresponding to infancy and early childhood. About 25 per cent. of all cases commence during this epoch. These cases are usually associated with marked mental deficiency or backwardness. Many of them are based upon organic lesions of the brain. The second epoch is from 10 to 22 or 23 years of age, or that period corresponding to puberty and early adolescence. No less than 54 per cent. of all cases commence during this epoch. It is *par excellence* the age of onset of genuine epilepsy. The mean age of maximum onset is 14 years, but the onset of the disease in young women is later by about two years than in the male sex. The third epoch embraces the remainder of life. There is a rapidly lessening tendency towards the onset of genuine epilepsy from the age of 30 onwards. Most of the epilepsies occurring in this epoch are founded upon organic lesions, arterio-sclerosis, or intoxications (alcohol, lead, &c.).

From these facts it is obvious that genuine or idiopathic epilepsy is a disease of youth, coming on at a time when the development and growth of the central nervous system and the maturation of the organs of reproduction are taking place. It is during this period that causes, insignificant or insufficient in stable nervous systems, may light up the tendency to convulsion or epilepsy, in those hereditarily prone towards it.

THE EXCITING CAUSES OF EPILEPSY.

The predisposing cause of epilepsy is in the majority of cases an inherited neuropathic disposition. Epilepsy may arise independently of any exciting or determining cause, being a spontaneous development attributable to the normal processes of brain growth and sexual maturation in predisposed persons. In a number of cases, however, some exciting influence is at work in the production of the first epileptic seizure. It is a cardinal principle that the cause of epilepsy is that circumstance to which the first fit is apparently due. The instability of the brain once induced becomes a characteristic feature, so that further attacks recur quite independently of the original or any other obvious exciting cause.

The relation of epileptic fits to menstruation is well established. In most cases the seizures occur immediately before or shortly after the period; and in chronic cases the monthly period is characterised by an increase in their frequency.

The normal process of child-bearing has also some influence in the causation of epilepsy. Pregnancy may be the exciting cause of the disease in some cases, and may induce a relapse of the seizures in some instances in which a cure has apparently been established or in which a long remission has occurred. On the other hand, pregnancy has been known to produce a temporary arrest or amelioration of fits; and there are well-authenticated cases in which a permanent arrest has been brought about in this way. Accouchement and the puerperium have also an important bearing upon epileptic fits. Cases are occasionally observed in which the disease originated at this time in the form of a puerperal eclampsia and persisted for many years as confirmed epilepsy.

[3] Lasègue, quoted by Féré, op. cit.
[4] Féré: Les Epilepsies et les Epileptiques, Paris, 1890.
[5] Clouston: The Neuroses of Development, Edinburgh, 1891.

Féré stated that some types of puerperal eclampsia are the onset of epilepsy in an acute form in predisposed persons.

Sleep is another physiological condition eminently favourable to the onset of epileptic fits. In many cases fits only occur during sleep, so that a clinical type has been recognised as nocturnal epilepsy. Pick has called attention to the frequency of fits during the hours of deepest sleep—viz., during the first hour or two after falling off to sleep, and again before waking. My own observations show that the greatest number of fits occur during the hour or two after falling off to sleep, a period which probably coincides with the greatest degree of cerebral anæmia.

A second and smaller group of epilepsies is found in which a definite extraneous cause acts as the excitant of the first fit, and, as such, of the disease. These causes may be: 1. Psychical influences, such as emotional excitement, fear, shock, anxiety, grief, or over-work. 2. Infective diseases, the most frequent being scarlet fever, but measles, pertussis, influenza, and diphtheria have also been observed. 3. Reflex causes play an important part as excitants of epilepsy, more especially in children and young adults predisposed by heredity to nervous instability. Attention is especially called to the necessity of a careful examination of the nose (for adenoids, polypi, or foreign bodies), of the eyes (for errors of refraction), of the ears (for chronic otorrhœa), of the teeth, the genital organs, the stomach, and of the intestines (for the presence of worms).

THE IMMEDIATE CAUSES OF EPILEPTIC SEIZURES.

From time to time it has been observed that the onset of an epileptic fit is accompanied by a temporary cessation of the heart's action and the pulse beat. This transient stoppage is attributed to cardiac inhibition; the loss of consciousness and the fit to the resulting sudden cerebral anæmia. Dr. A. E. Russell[6] has collected a quantity of evidence in favour of this theory. He does not, however, contend that complete cardiac arrest occurs in every epileptic convulsion, for the pulse may persist throughout a fit, although, in his opinion, an extreme feebleness, short of absolute cessation, might be sufficient to initiate a fit.

It is well known that convulsions may be due to the sudden cutting off, or to the prolonged deprivation of, the cerebral blood supply. The convulsions of Stokes-Adams disease, the Kausmaul-Tenner fits provoked by ligature of the internal carotid arteries, and the spasms consequent upon electrical stimulation of the peripheral end of the cut vagus nerve are all due to this cause. Russell contends that the fundamental factor underlying the epileptic fit is cerebral anæmia, probably associated with vaso-constriction of the cerebral blood-vessels. The evidence in favour of cerebral anæmia being the cause of convulsions is quite clear, but as yet there is no direct demonstration of either vaso-constriction or cerebral anæmia being the exciting cause of the recurring seizures of epilepsy.

Paralysis of the vaso-constrictor nerves, rendered permanent by removal of the superior cervical ganglion, has not led to that favourable outcome which was expected of it, when introduced as a means of treating epilepsy on the theory that the fits were due to cerebral anæmia from vaso-constriction.

Whether the primary excitant of the epileptic attack be a spontaneous "discharge" of nervous energy or cerebral anæmia, induced by vaso-constriction and cardiac inhibition, the fit would seem to originate in some portion of the cerebral cortex. I accept the old view of Hughlings Jackson that epilepsy is a disorder of the highest level, and the observations of many subsequent workers, anatomical, experimental, and clinical, have placed the highest level in the frontal lobe between the intermediate precentral and prefrontal zones. Campbell[7] has shown that in association with each recognised cortical centre there exists a corresponding higher or psychical centre. The nature of the aura determines the portion of the cerebral cortex in which the fit starts. Warnings of special sense are either crude sensations or sensations of a more elaborate and psychical character. The latter are especially characteristic of idiopathic epilepsy. It is, therefore, conceivable that the "discharge" commences either in the lower or higher portions of a special sense region, according to the nature of the warning sensation.

A noteworthy point is the constancy of the warning in particular cases. As Herpin pointed out, the warning sensations, however diversified they may be, are always, or nearly always, similar in the same subject. There are a few exceptions. During the course of the disease the aura of the major seizure may disappear, but the minor attacks retain the characters of the original warning. In the case of the large number of epileptics in whom no warning of the seizure is present, but in whom the fit is ushered in by a sudden and profound loss of consciousness, the discharge conceivably originates in the frontal area. Here the onset of the fit is essentially psychical. The patient is dazed, or stuporous, or drops down suddenly. In many of these cases transient conjugate deviation of the eyes occurs, or a cry is uttered. Whether in any particular case the morbid condition which gives rise to the "explosion" is inherent in a cortical centre, common to the whole cerebral cortex, or is attributable to a vaso-motor instability in blood condition, are points which still remain a mystery.

It may be asked, What is the cause of the enormous variability in the frequency of epileptic seizures, a frequency which varies from two or three fits in a year to several score in 24 hours? Is the same cause at work in both these types of the disease? In whatever part of the cerebral cortex the discharge arises, it rapidly spreads so as to involve both sides of the brain, although one side is usually more affected than the other. Hence it comes about that the examination of the reflex, motor and sensory systems after a major epileptic fit reveals evidence of temporary paralysis and of alterations in the reflexes indicative of a transient disturbance of the pyramidal system. The knee-jerks are at first abolished and then exaggerated, the abdominal reflexes are lost, and the plantars show a temporary extensor response. These symptoms vary in accordance with the character of the seizure. They are not present after minor attacks; they may be observed on one side only in cases where the convulsions have been preponderatingly unilateral. They are most obvious and persist longest after serial outbursts or the status epilepticus.

Temporary impairment of motor power (exhaustion paralysis) is observed on one or both sides, but more especially on the side which has shown the greater convulsion. Diminution or loss of cutaneous sensibility may also be found after a fit. It is most marked in the limbs which show the greater motor weakness. Amblyopia, deafness, and impairment of smell and taste may also be of temporary occurrence.

TOXÆMIC EPILEPSY.

It has for a long time been contended that an excitant of epileptic seizures might be found in toxic or autotoxic causes arising in connexion with the body metabolism or gastro-intestinal disorders. The discrepancies, however, in the results of observations by different workers upon urinary and blood toxicity in epilepsy have not afforded satisfactory evidence upon which to found such a theory. It is now generally accepted that the altered condition of the urine and blood, which has been found in association with epileptic attacks by many observers, is the temporary effect and not the cause of the seizures. Those cases which show the most pronounced reactions in blood and urine have been instances of serial epilepsy, the status epilepticus, and fits accompanied by acute mental symptoms—types of the disease in which, from the general constitutional disturbances, there is more reason to suspect an infective or toxic causation.

Binswanger[8] has called attention to a small group of epilepsies which may have a toxæmic basis. This group is characterised by: (*a*) well-marked premonitory signs, of which the most common are of a psychical type—irritability, fitfulness, quarrelsomeness, lethargy, somnolence, and delusions; (*b*) fits of frequent occurrence developing either into serial epilepsy or the status epilepticus, accompanied by constitutional disturbances, such as furring of the tongue, constipation, acceleration of the pulse, and elevation of temperature; and (*c*) more or less prolonged intervals free from attacks between the seizures.

Reference only is made to the observations of Voison and Peron,[9] who found a hypotoxic condition of the urine before and a hypertoxic condition after the fits; to those of Haig,[10] who laid stress upon the relation of epileptic fits to the normal

[6] A. E. Russell: THE LANCET, vol. i., 1909, pp. 963, 1031, 1093.
[7] A. W. Campbell: Studies in Localisation, Cambridge, 1905.
[8] Binswanger: Die Epilepsie, Wien, 1899.
[9] Voison and Peron: Archives de Neurologie, vol. xxiv., p. 178.
[10] Haig: Uric Acid, 1892, p. 21.

diurnal variations in the excretion of uric acid; and to those of Krainsky,[11] who attributed the convulsions of epilepsy to the formation of carbamic acid, one of the derivatives of urea. Details of the investigations of these observers have been given in my monograph on epilepsy. The presence of cholin in the blood and cerebro-spinal fluid of epileptics was originally described by Donath.[12] This substance, which was found by Mott and Halliburton[13] in the cerebro-spinal fluid in organic nervous disease, was attributed by them to disintegration of the myeline sheaths of the nerve fibres.

It has been shown experimentally (Dide, Donath) that moderate doses of cholin injected into the circulation do not produce convulsions, but that in large doses both convulsions and paralysis may result. Buzzard and Allen[14] showed that the large doses of cholin necessary to produce convulsions in animals were much in excess of what could be produced under ordinary conditions in man. In a recent paper Donath[15] records the results of his experiments into the convulsion-producing properties of the substances found in the blood and urine of epileptics. He showed that when injected into guinea-pigs and dogs, uric acid, neutral urate of sodium, carbonate of ammonium, kreatin, and lactic acid were entirely innocuous. The only convulsion-producing substances were ammonia and the organic ammonium bases—trimethylamin, cholin, kreatinin, and guanidin; the last body is not found in human urine, but is one of the uric-acid products.

A generally recognised feature of infection is increased coagulability of the blood. Dr. John Turner[16] has shown (*a*) that the average rate of coagulation is quicker in severe cases of epilepsy; (*b*) that the rate is quickened during the period that the patient is having fits (serial epilepsy); (*c*) that there is a further quickening of the coagulation rate up to 24 hours before a seizure; and (*d*) that from 24 to 48 hours after a fit there is a rebound and retardation in the rate of blood coagulation. Intravascular clotting occurs clinically in cases of infection, most probably as a result of the liberation of nucleo-proteid. Dr. John Turner[17] has suggested that just before an attack the leucocytes and blood-plates shed their nucleo-proteid. In consequence a hyaline material is thrown into the smaller arterioles and capillaries, obstructing the free course of the circulation. These appearances are most conspicuous in the brains of persons dying in status epilepticus, as well as in general paralytics in whom epileptiform attacks have occurred. It is, therefore, not improbable that some types of epileptic convulsions, notably serial epilepsy and the status epilepticus, may be associated with nucleo-proteid thrombosis arising from toxæmic influences within the body.

LECTURE II.

Delivered on March 2nd.

THE BORDERLINE OF EPILEPSY.

GENTLEMEN,—In any discussion of the phenomena on the borderline of epilepsy brief consideration should in the first place be given to hysterical seizures and their differentiation from epileptic attacks.

I. EPILEPSY AND HYSTERIA.

Both epilepsy and hysteria are diseases founded upon hereditary degenerative endowment. Both disorders have a common clinical symptom—viz., the periodic occurrence of paroxysmal attacks, characterised by an alteration of consciousness.

This is hardly the place to enter into an analytical consideration of these two great psycho-neuroses apart from their paroxysmal phenomena. In the preceding lecture the outstanding symptoms of epilepsy were given. It was also shown that although in recent and slight cases it may remain throughout a so-called "functional" disease, in the severe and confirmed cases with mental impairment the symptoms became grafted upon an organic alteration of the cortical tissue. Epilepsy, therefore, is a dementing disorder.

Hysteria, on the other hand, remains throughout a purely functional, mainly psychical, disease. According to Janet,[18] its fundamental characteristic is a dissociation or severance of some mental processes from the main personal consciousness. It has no pathological anatomy and no tendency towards dementia. The most recent observations tend to show that there is no such generally recognised condition as "hystero-epilepsy" in the usually accepted sense. Inter-paroxysmal hysterical symptoms may be added to genuine epilepsy, and *vice versâ*.

Bratz and Falkenberg[19] found that all their cases were either hysteria or epilepsy or a combination of the two diseases. Major hysterical attacks are, as a rule, fairly distinct in character from major epileptic seizures. But the minor attacks of both disorders are sometimes not easy to differentiate. If an attack is being described by an untrained onlooker it may be a difficult matter for a physician to decide whether the paroxysms are those of epilepsy or hysteria, as the duration of the minor seizures in both diseases is almost the same, and they may both occur in series. Moreover, the perversion or dissociation of consciousness in the hysterical attack may readily be mistaken for the abolition or impairment of consciousness which is the characteristic feature of the epileptic seizure.

On the other hand, if the attack should be observed by the physician there is, as a rule, less difficulty. The rolling or squinting movements of the eyeballs, and the oscillations of the head in the hysterical attack, are quite distinct from the tonic conjugate deviation of the head and eyes in the epileptic; the tonic spasm of the limbs inducing flexion of the arms and extension of the legs in the latter are in contrast to the tonic spasm mainly of the muscles of the neck and back in the former; the steady development and eventual yielding of the clonic spasms in epilepsy stand out in striking contrast to the vibratory tremors of the hysterical attack; and the sudden relaxation of the spasm and the almost instantaneous return to consciousness in the hysterical seizure is a feature of noteworthy importance.

The hysterical seizure differs essentially from the epileptic in three additional features:—1. The hysterical seizure does not terminate in psychical disturbance, confusion, or automatism. Hysterical patients come out of their attacks suddenly and often express a feeling of relief after the attack is over. 2. As pointed out by Janet, there is a possibility of awakening the phenomena of the hysterical seizure by hypnotism. Epileptics are not at all hypnotisable, and in consequence it is not possible to produce in them a real somnambulistic state with consecutive amnesia. 3. Should it be possible to examine the reflexes of the patient recovering from a seizure certain changes will be found in most cases of major epilepsy. The most important transient changes indicating disturbance of the pyramidal system are alteration of the plantar reflex from the normal flexor to the abnormal extensor response, abolition or impairment of the abdominal reflexes, and exaggeration of the knee-jerks.

II. EPILEPTOID PHENOMENA.

There is no doubt that many people are prone to attacks which cannot be classified either under hysteria or epilepsy. The attacks are in the main purely subjective, but in some cases objective phenomena, chiefly of a circulatory and vaso-motor character, may be observed. Owing to the absence of any systematic classification there has been a tendency to group the symptoms under different headings, each author devising his own terminology for the sake of convenience or according to his conception of the malady.

Oppenheim was the first to describe under the term "psychasthenic attacks" certain periodic seizures, mainly because they occurred in persons subject to common psychasthenic symptoms, such as fears, dreads, apprehensions, obsessions, and tics. The leading features of these attacks were: (*a*) That they did not occur during childhood; (*b*) that there was a special cause for the attacks; (*c*) that they were of infrequent occurrence; (*d*) that they were characterised by prolonged unconsciousness without convulsion and only slight twitching of a few muscles; and (*e*) that there was an absence of mental changes. These attacks would seem to be extremely rare, and in my opinion difficult to differentiate from epilepsy.

Janet[20] has described under the term "psycholepsy"

[11] Krainsky: Mémoires Couronnés, 1901, p. 15.
[12] Donath: Deutsche Zeitschrift für Nervenheilkunde, Band 27, Part I.
[13] Mott and Halliburton: Brit. Med. Jour., 1904, vol. ii., p. 1557.
[14] Buzzard and Allen: Review of Neurology, vol. iii., p. 453.
[15] Donath: Deutsche Zeitschrift für Nervenheilkunde, 1907, p. 232.
[16] John Turner: Journal of Mental Science, October, 1908.
[17] John Turner: Brit. Med. Jour., 1906, p. 496.
[18] Janet: Major Symptoms of Hysteria, New York, 1907.
[19] Bratz and Falkenberg: Archiv für Psychiatrie, 1903, p. 328.
[20] P. Janet: Les Obsessions et la Psychasthenie, Paris, vol. i.

conditions characterised by an alteration of consciousness, which favours the development of a "dreamy state" in which a feeling of unreality or of non-existence is the outstanding symptom. Sir William Gowers[21] has described seizures whose symptoms were referred chiefly to the distribution of the pneumogastric nerve. To these he has given the term vagal or vaso-vagal attacks. Finally Dana[22] has designated under the term "para-epilepsy" seizures of a psychical, vertiginous, or vaso-motor type, occurring in neurotic or psychasthenic individuals, more especially about adolescence. As these seizures, according to this observer, resemble "aura fits" or abortive epileptic attacks, he has classed them in a group of para-epileptic phenomena.

It is therefore clear that observers now recognise a type of periodic seizure, which is neither hysterical nor epileptic, occurring in persons of a neurasthenic or psychasthenic temperament. Attacks of a not dissimilar kind, however, may be observed in subjects of genuine epilepsy, and there are other attacks in which the diagnosis from hysteria is most difficult and uncertain.

The term "epileptoid" is suggested as one which seems to include all the symptoms of a paroxysmal and recurring character which lie upon the border-line of epilepsy. It would seem possible from our present knowledge to subdivide these symptoms into two groups: (*a*) Attacks having features of a vaso-motor character—vaso-epileptoid; and (*b*) attacks having symptoms of a psychical character—psycho-epileptoid.

1. VASO-EPILEPTOID ATTACKS.

These seizures are characterised by throbbings, thumpings, and beatings of the heart, flushings of the face, and a fulness of the head, dizziness, and, frequently, sensations of a paræsthetic character in the extremities. They may be of daily occurrence, and last from a few minutes to several hours. They occur in persons of a nervous temperament. Dana notes that there is usually an associated element of thyroidism. In one case of my own there was a decided tendency towards dermographism.

Gowers also described seizures characterised by definitely vaso-motor symptoms, such as coldness of the limbs, pallor of the face, shivering almost amounting to rigor, tingling and numbness of the extremities, and sometimes a slight tetanoid spasm. A fuller development of the seizures, bringing them into a relationship more akin to epilepsy, is well illustrated by the vaso-vagal attacks described by Sir William Gowers.

The symptoms of the vagal attack, as given by Gowers, are: (1) Sensations referred to the stomach, heart, and respiratory systems; (2) the ascent of the sensation from the stomach to the chest, throat, and head; (3) it is accompanied by a feeling of respiratory distress and cardiac oppression, fear, and a sense of impending death; (4) there is no true loss of consciousness, but the mental operations are slow, and sometimes characterised by a feeling of unreality; (5) the attack ends with a great acceleration of the heart's action; and (6) the whole attack lasts for about 15 or 20 minutes.

2. PSYCHO-EPILEPTOID ATTACKS.

These are seizures in which the outstanding features are of a psychical character, usually a sense of apprehension, dread, or fear. They are commonly associated with sensations of nervousness, numbness, coldness, nausea, cephalic sensations, and are frequently accompanied by sensations of a vague, indescribable character. Sometimes the feeling of fear is intense, and may be replaced by a sense of impending death. In the true attacks of this kind consciousness is never abolished, but the mental state may assume a dreamy attitude, with a feeling of unreality. The attacks occur in persons who present other features of a psychasthenic character, such as dreads, fears, and apprehensions. There is usually also a well-marked neuropathic heredity. Although in many cases the attacks are of the kind just described, there are other cases in which these attacks merge into epileptic seizures.

The attacks described here as "psychical" are clearly closely related to those of a more purely vaso-motor type, the vaso-vagal attacks of Gowers being seemingly the connecting link between the two types of seizure, as well as between them and attacks of an epileptic nature.

One of the commonest forms of warning in epileptic seizures is the epigastric sensation, consisting of a subjective sensation referred to the stomach or upper abdominal area. These sensations may or may not be associated with gastric disturbances, such as flatulence or any abnormal condition of the stomach contents. In the majority there are no signs of local gastric disorder. Closely allied to the epigastric sensation is the cardiac warning, which consists mainly of palpitation of the heart, and sometimes of pain, and is generally accompanied by a sensation of suffocation, strangulation, or oppression, sometimes with a sensation of impending death. So closely does the condition resemble angina pectoris that a variety of minor epileptic attacks has been designated "epileptic pseudo-angina."

A notable accompaniment of the epigastric warning and its allied sensation of cardiac oppression is sensation of intense fear or apprehension, and sometimes a desire to be alone. In addition to the sense of fear, a peculiar "dreamy state" has been described, in which consciousness is lost or perverted (Hughlings Jackson). Whatever may be the explanation, it would appear to be a well-recognised fact that a definite relation exists between epigastric sensations and a sensation of fear and apprehension, but this association is not confined to epileptic attacks. It is also present in other conditions. In many states of fear or alarm a vague sensation is referred to the abdomen. Persons who suffer from melancholia constantly refer to the feeling of weight, or oppression, in the region of the stomach, and many individuals, obsessed by some fear or panic, refer to a vague and indefinite sensation in the stomach as the source of their discomfort.

The application of the principles which have been already laid down, when considering the march of an epileptic attack, shows that minor epileptic seizures may occur, characterised by an epigastric or cardiac sensation, accompanied by a sensation of fear, or of oppression, or even of impending death, in which consciousness may be retained, or, at the most, merely blurred or perverted.

The attacks already described as "psychical seizures" have many of the qualities of epileptic auras and abortive epileptic fits; hence the term "para-epilepsy" which Dana has applied to them.

The close relation between epilepsy and the vaso-vagal attacks has also been emphasised by Sir William Gowers, who regards them as a long drawn out or extended epileptic seizure. Dr. A. E. Russell[23] explains them on the theory that a sudden depression of the normal vaso-motor tone occurs in the splanchnic area, which leads to an accumulation of blood in that locality. If only momentary in duration, the sensation of a sudden sinking in the pit of the stomach is felt; if of longer duration this is succeeded by a faint. If severe, the vascular depression has reached a point incompatible with consciousness. The position of these seizures amongst periodic phenomena, therefore, depends upon the view which is taken of the nature of epileptic attacks. Russell regards the whole series from simple syncopal attacks or faints up to epilepsy as primarily of vaso-motor origin. He favours the doctrine that such symptoms are signs of a "vaso-motor" ataxia, a condition in which the vascular mechanism is unable to adjust itself to strain. Whether this is the true explanation of a remarkable series of phenomena is a point upon which it is difficult to offer an opinion. The theory just expressed certainly brings a train of not dissimilar periodic seizures into line. Epilepsy, however, seems to me to be primarily so much a cerebral or psychical disorder that I hesitate to classify it along with faints and syncope as a disease of the vaso-motor mechanism.

Many of the features of the borderline conditions just described are not psychical, but seem to be the consequences of functional disturbance of the lower centres in the medulla oblongata. I would also emphasise the fact, already referred to in the first lecture, that the convulsive element is only one feature of epilepsy. True epilepsy is always accompanied by some psychical alteration apart from symptoms of a psychasthenic kind; I am not aware that the epileptoid conditions just described ever present any tendency to mental impairment or dementia.

III. SLEEP PHENOMENA.

The physiological condition underlying sleep is especially favourable for the development of epileptic attacks. It was shown in the first lecture that the few hours after falling off to sleep are the hours most favourable for the occurrence of

[21] Sir William Gowers: The Borderland of Epilepsy, London, 1907.
[22] Dana: Epilepsy and Epileptics, United States of America, 1906, p. 90.
[23] A. E. Russell: THE LANCET, vol. i., 1909, pp. 963, 1031, 1093.

epileptic fits. In consequence of this there is in many cases of epilepsy a striking regularity in the periodicity of the attacks, a fit occurring at or about the same hour on each occasion. This period of deepest sleep is also a favourable time for certain sleep symptoms which appear to be upon the borderline of epilepsy—namely, night terrors in the adult.

Night terrors are common in neurotic children, but their significance is merely that of an unstable nervous system. Their occurrence in adults, or their continuance from childhood into adult life, is of greater significance, and may raise the question of their epileptic character in some cases. They usually reveal themselves in the utterance of loud, piercing screams, sometimes a single scream, at other times more frequently repeated. Their chief characteristic is that having occurred at some time during the first few hours after falling off to sleep they do not occur again during the same night. They have been known to recur every night for many months in succession; on the other hand, they may recur only at long intervals. In most cases the sufferer is entirely unaware of their occurrence, except in those cases in which sleep-walking also occurs, where the patient awakes and finds that something unusual has taken place. I have known cases in which the attack has been associated with a dream, but these are more likely to be cases of epilepsy. Sleep-talking and sleep-walking either replace or may be associated with nocturnal screaming.

Adult patients subject to these and similar sleep symptoms sometimes present the stigmata, both structural and psychical, which are characteristic of epilepsy. In all there is a well-marked neuropathic heredity. It is well known, however, that attacks in which a patient may wake suddenly from sleep in a state of nervous fear, apprehension, or panic, are of temporary occurrence and indicate a state of nervous stress or strain, induced by overwork or anxiety, and not infrequently excited by some gastric or intestinal disorder. I wish, however, to point out that sleep symptoms are found from time to time in persons of highly nervous temperament which should be regarded as symptoms of importance and probably classed as phenomena upon the borderline of epilepsy.

The Croonian Lectures

ON

THE BEHAVIOUR OF THE LEUCOCYTES IN INFECTION AND IMMUNITY.

Delivered before the Royal College of Physicians of London on June 14th, 16th, 21st, and 23rd, 1910,

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LECTURE IV.[1]

Delivered on June 23rd.

MR. PRESIDENT AND GENTLEMEN,—The importance of the polynuclear leucocytes in the defence of the body against bacterial invasion has been dwelt on in my previous lectures from more than one point of view. It follows naturally that the mother tissue from which these cells are derived must play no small part in defence, at least when such defence has to be prolonged. This has long been recognised; it has been said that "leucocytosis is a function of the bone marrow," and Ehrlich has aptly termed this tissue a "defensive organ."

THE BONE MARROW IN IMMUNITY.

A distinction must, of course, be drawn between the "red marrow" and the "yellow" or "fatty" marrow which fills the shafts of most long bones. The cavities of the bones are larger than is necessary to lodge the amount of true marrow tissue which suffices for the needs of the healthy body; the extra space is utilised for fat storage. But stained sections of fatty marrow from a long bone show something which is not seen in ordinary adipose tissue elsewhere; here and there on careful search are to be found tiny foci, it may be single cells only, of true marrow tissue with its characteristically granulated cells. When need arises these cells can undergo rapid increase, and the fat can readily be absorbed to make room for them; the yellow marrow is easily converted into red.

The marrow is the mother tissue of red cells as well as of white. Of the leucocytes, it furnishes the granulated oxyphil, basophil, and neutrophil cells, and it further contains islands of lymphatic tissue which may share in the general lymphoid hyperplasia of lymphatic leukæmia. The marrow may therefore undergo a transformation in several different directions in accordance with the special needs of the body at the moment. If the urgent call is for more red corpuscles there is seen an "erythroblastic" reaction in which the predominant marrow cell is the erythroblast; if the call is for leucocytes there is a "leucoblastic" reaction, which is commonly a neutrophil leucoblastic reaction because the need for an increase in the polynuclear leucocytes is a much more common thing than the need for eosinophils, basophils, or lymphocytes. It is a good general rule that the changes which have been seen in the blood during life are found reflected in the marrow after death.

Inasmuch as the polynuclear neutrophil leucocyte is the only marrow cell which we know to be actively concerned in defence against bacteria, I propose here to consider only the neutrophil (or amphophil) leucoblastic change in the marrow. It has been studied by several observers. Amongst the earliest experimental work is that of Roger and Josué, published in 1896 and 1899; they examined the marrow in the rabbit after subcutaneous inoculation with staphylococci. Already in two days they found evidence of cellular proliferation in the bone marrow, and in 5 days this was marked and was found to consist in a leucoblastic reaction involving chiefly the amphophil myelocytes. This was confirmed by Muir in 1901, who clearly recognised the relation between the leucoblastic changes in the marrow and the persistent circulatory leucocytosis. Muir later extended his observations to the marrow in human infections (1902); he found changes, similar to those experimentally produced in the rabbit, in pneumonia, empyema, and other suppurative conditions. The changes involve not only a hyperplasia of the cells bearing neutrophil granulations throughout the red marrow generally, but also an extension of the red at the expense of the yellow fatty marrow.

My own observations on the bone marrow of the rabbit in staphylococcal infections are in complete accord with those of Roger and Josué and of Muir. I have employed the intravenous route of infection and I have already stated that when death occurs rapidly, in 40 hours or less, from acute septicæmia I find no leucoblastic reaction in the marrow, but rather a depletion of this tissue in respect of its neutrophil cells. These are the cases which show a circulatory leucopenia as the end approaches. But in every case in which life has been prolonged for four days or more I have found a neutrophil leucoblastic reaction in the marrow; these are the cases which show during life a persistent, if variable, polynuclear leucocytosis, and after death local foci of tissue infection. I have further found that the longer the animal survives the more pronounced is the neutrophil transformation of the marrow.

The subjoined diagram shows the actual figures obtained from neutrophil marrow counts in a series of eight normal rabbits dying after intravenous inoculation with staphylococcus aureus (seven cases), and streptococcus pyogenes (one case). It is seen that in the three animals dying early (40 hours or less) the figures are low; in those surviving for four days or more the figures are high and become progressively higher till, in the animal living eight days, the neutrophil cells per cubic millimetre of fresh marrow reach the very large number of 596,000. It is thus clear that in presence of an active pyogenic infection the response of the bone marrow is prompt and energetic; the neutrophil cells are trebled or quadrupled in number in the course of a week or so. This is in perfect harmony with the known facts in man: Muir's observations on the marrow in pneumonia and empyema indicate an equally prompt and energetic reaction.

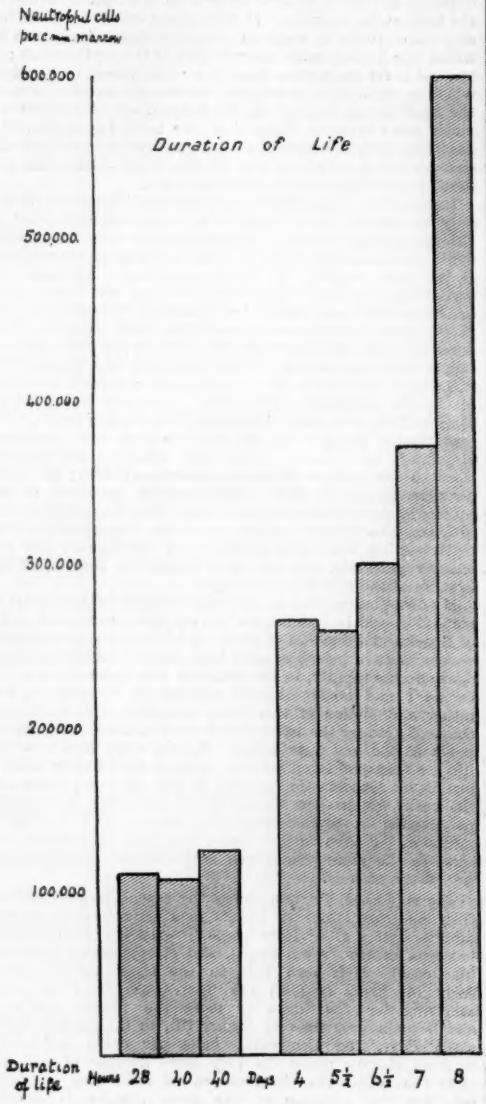
SIGNIFICANCE OF LEUCOBLASTIC REACTION.

From these facts we are entitled to draw two conclusions. I have said that rabbits showing a marked leucoblastic reaction in the marrow exhibit during life a persistent and

[1] Lectures I., II., and III. were published in THE LANCET of June 25th (p. 1737), July 2nd (p. 8), and July 9th (p. 83), 1910.

usually high leucocytosis up to death; in this they contrast strongly with the more rapidly fatal cases. It would seem that the "plant" for the production of polynuclear leucocytes present in normal marrow, though it may suffice for a high transitory leucocytosis, such as that which I have spoken of as reactive leucocytosis after anaphylactic shock, or for that associated with an infection easily overcome, is quite inadequate for the *maintenance* of a high leucocytosis.

CHART 11.



Showing the content of the bone marrow in neutrophil cells at mid-femoral level in rabbits dying from acute infection with the pyogenic cocci.

In presence of a grave pyogenic infection steps are at once taken to increase the plant necessary to keep up a due supply. In spite of this the patient or the animal may die, but it is permissible to assume that in every case showing a *sustained* circulatory leucocytosis this marrow reaction is present and that when, as is commonly the case, recovery occurs, the reaction has been part, and I think a very important part, of the machinery by which the body has overcome the infection. The prognostic value of the leucocyte count in such human diseases as pneumonia rests on a definite anatomical basis.

The second conclusion which may be drawn from the facts is that of the vast importance of the polynuclear leucocyte in the bodily struggle against invasion by the pyogenic cocci. The immediate steps which seem to be taken to provide an increased supply of these cells in presence of such invasion, and the disastrous results which seem to attend failure of the supply, can bear only one interpretation. If, in any given bacterial infection, a sustained polynuclear leucocytosis is found during life, and, after death, a neutrophil leucoblastic reaction in the bone marrow, we are fairly entitled to conclude that the defence of the body against the microbe in question rests largely, perhaps entirely, with the polynuclear leucocytes, and is probably phagocytic in essence. An impartial observer studying an invasion of this country by a foreign foe would note an excess of soldiers on the battlefield and on the railways leading to it; he would see an increased activity in the depôts where soldiers are trained and drilled; and he would justly conclude that we relied on our soldiers for the defence of our native land.

But if he saw few soldiers about, in spite of the imminence of the danger, and if he saw the invasion repelled without the apparent need for any increase in our soldiery, he would with equal justice conclude that in this particular invasion we had some other means of defence. And thus, I believe, and shall shortly endeavour to show, that the habitual absence of a circulatory polynuclear leucocytosis and of a neutrophil leucoblastic reaction in the bone marrow must mean that the polynuclear leucocytes play no part, or only a subordinate part, in that kind of bodily infection.

THE HUMORAL FACTOR.

In speaking thus of the importance of the polynuclear leucocyte in infections by the pyogenic cocci I do not wish to disparage the humoral accessories which render the action of these cells effective. I am convinced of the importance of opsonic action, but I desire to protest against the exclusive importance which some have in recent years attached to this phenomenon. Salt and mustard are valuable elements in a meal, but the beef-steak and the man who sits down to eat it must not be left wholly out of account.

In the course of my work on the pyogenic cocci I have obtained a certain amount of evidence that the intravenous injection of killed cultures of staphylococcus aureus is efficacious in producing a neutrophil leucoblastic reaction in the marrow of the rabbit. I mentioned in my last lecture an experiment in which ten rabbits received a weekly intravenous dose of 200 million killed staphylococci, two rabbits being sacrificed for observation each week. One of each pair of animals was simply examined as to the condition of its bone marrow. It will be remembered that in this experiment the immunity of the animals showed an increase for the first two or three weeks, but that their protection then faded away, owing probably to over-vaccination. The figures obtained from the bone marrows were as follows. A week after the first dose of vaccine the count showed 249,000 neutrophil cells per cubic millimetre of fresh marrow—a considerable increase above the normal. The animal killed a week after the second dose of vaccine had a marrow count of 315,000. After the third, fourth, and fifth doses the figures were respectively 232,000, 128,000, and 216,000.

There is thus seen a correspondence between the degree of leucoblastic reaction in the marrow and the height of the leucocytosis observed after vaccination as detailed in my previous lecture. Both corresponded with the degree of resistance manifested by the animals which were inoculated with living cocci, and I may add that the opsonic indices of the animals showed the same rise at first, followed by a fall towards the end of the series.

So far as this experiment goes, it shows a fairly close parallel between the degree of immunity on the one hand, and on the other the leucoblastic reaction of the marrow, the capacity for a high circulatory leucocytosis on stimulation, and the opsonic index. These three things seem all to be connected, and, in this experiment at least, to vary together: they are part and parcel of a common mechanism, the object of which is to secure the phagocytic destruction of the cocci. We should, I think, be wrong in assigning exclusive importance to any one factor in the process. The opsonic index

probably offers an easy method of determining the general efficiency of the mechanism as a whole, but I should not, on the evidence, be prepared to admit a humoral factor as the sole index of immunity, for I should expect to find it more fluctuating than the anatomical substratum of defence indicated by the changes in the bone marrow, and upon which the use and significance of the opsonic index must depend. I am referring here to the opsonic index against the pyogenic cocci, where phagocytosis plays an undisputed part as the main bodily defence.

FURTHER OBSERVATIONS ON PYOGENIC INFECTIONS.

Before leaving the subject of the changes in the bone marrow in infections by the pyogenic cocci, I may add a few other observations bearing on the subject. In a rabbit which had been three times treated intravenously with a vaccine of streptococcus fæcalis, and which died for no apparent reason, I found 315,000 neutrophil cells per cubic millimetre of bone marrow, but in another animal killed after similar treatment the number was only 138,000, and in a third, which died much wasted, the number was only 128,000. In an animal killed after two intravenous inoculations with micrococcus citreus agilis I found no leucoblastic reaction in the marrow; the neutrophil count was 134,000 per cubic millimetre. Several of my rabbits have contracted a scaly disease of the inner surface of the ear, in which an accumulation of pus and epithelium forms a laminated mass over half an inch in thickness. I do not know the exciting cause of this, but a white staphylococcus of peculiar reactions is the most constant organism in the lesions, and sections of the affected ears show an obvious local accumulation of polynuclear leucocytes. There is also a circulatory polynuclear leucocytosis during life. I have examined the bone marrow in two rabbits affected in this way and in each case there has been an extreme leucoblastic reaction; in one the neutrophil count per cubic millimetre of marrow was 463,000 and in the other 540,000.

The general conclusion to which these observations have led me is that infections by, and vaccinations with, the pyogenic cocci lead in a few days to a neutrophil leucoblastic reaction in the bone marrow, pointing to the polynuclear leucocyte as the main element in defence.

NON-PYOGENIC INFECTIONS.

I must now give certain data as to the changes in the bone marrow in infections other than those due to the pyogenic cocci.

My observations here are comparatively few. A considerable number of the experimental rabbits died, wasted, during the course of immunisation, and the low neutrophil counts obtained from such animals cannot be used in argument. The scanty data which follow are from animals which were in reasonably good condition at the time of death.

Tubercle.—An animal which had been five times vaccinated intravenously with doses of dead tubercle bacilli and was fat and well nourished was killed 19 days after the last dose. Its neutrophil marrow count was 159,000 per cubic millimetre.

Bacillus coli.—An animal six times vaccinated intravenously with killed B. coli communis in doses of 200 to 400 million was sacrificed some five weeks after the last dose. It was in good condition and its various humoral reactions (e.g., bacteriolytic power and opsonic index) were raised above the normal. The neutrophil marrow count was only 111,000 per cubic millimetre. Another rabbit, which had passed through three severe infections with living B. coli, intravenously administered, was killed on account of cage-palsy two months after the last infection; it had lost weight, but there was no depletion or mucoid transformation of the marrow. The neutrophil marrow count was here 164,000 per cubic millimetre. A rabbit vaccinated three times with a combination of B. coli communis and streptococcus fæcalis (100 million of each) and had later survived an intravenous infection with living B. coli (1600 million bacilli), died three weeks later for no apparent reason. Its marrow count was 149,000 neutrophils per cubic millimetre. In the coli-immune rabbit which I have previously mentioned as dying from anaphylactic shock after an intravenous injection of vaccine, the neutrophil marrow count was only 86,000 per cubic millimetre.

I have no reliable counts on rabbits immunised against the typhoid bacillus or Gärtner's bacillus; my animals died, wasted or septic, and yielded no data of value. The same is true of a diphtheria immune animal. Dr. J. W. H. Eyre of Guy's Hospital was good enough to furnish me with the femora of a rabbit dead of acute M. melitensis septicæmia three days after intracerebral infection. The marrow count in this animal was normal, 169,000 neutrophils per cubic millimetre.

These are, unfortunately, all the marrow counts which I have to offer bearing on the effects produced by bacteria other than the pyogenic cocci. Only in one case, that of B. coli communis, are the counts numerous enough to allow of any conclusion being drawn, and though further data are required we may provisionally infer that the colon bacillus has no power of exciting a leucoblastic reaction in the marrow. My single observation suggests that this may also be true of the tubercle bacillus. I may add that in the bone marrows of the cases I have just mentioned, not only was there no neutrophil leucoblastic reaction, but no other change which I could recognise; the marrows appeared in all respects normal.

THE VARYING NATURE OF BODILY DEFENCE AGAINST DIFFERENT BACTERIA.

It will have been apparent, in the account which I have given of my own observations upon the bone marrow and upon the behaviour of the leucocytes in various conditions of infection and immunity, that the body reacts differently according to the species of bacterium by which it is invaded or against which it is vaccinated. The clinical facts in relation to different human infective diseases have long suggested this, and the more closely the cytological changes in the blood and the humoral properties of the serum are studied, the more apparent is the fact that the body has several means of defence, and that it employs now one and now another in resisting microbic aggression. I propose to devote the remaining time at my disposal to a closer review of these differences.

OBSERVATIONS ON HARMLESS BACTERIA.

I will first mention certain experiments which I have made as regards the effect of perfectly harmless bacteria upon the body. While I was working with well-known pathogenetic species it seemed to me that clues might possibly be obtained as to the nature of the differences which I observed by experimenting with bacteria which from their properties could never have been capable of growing in the mammalian body. Large numbers of bacterial species cannot grow at all at the temperature offered by warm-blooded animals. These are termed "psychrophil" bacteria by Fischer. Could it be shown that there were differences in the bodily response to the presence of different sorts of such psychrophil bacteria it would suggest that these variations depended upon some fundamental differences in the chemical nature of the bacterial proteins, and not upon any acquired properties on the part of the body, derived from past ancestral experience of infection.

The response of the animal body to the presence of non-pathogenetic bacteria is practically a virgin field of research, yet it is one which is full of promise as to the light which may be shed upon the more directly important problems of immunity. I have experimented with only two psychrophil bacteria and it may have been a happy chance that I chose two against which I found the animal body to respond in a fundamentally different manner. I possessed a strain of a coccus which I had isolated from the air many years before and which I identify with the organism described by Menge as "micrococcus citreus agilis." It is a coccus, positive to Gram's stain, and provided with one or two very long flagella—i.e., it belongs to Migula's genus "planococcus." My strain was totally incapable of growth at body temperature. The other species with which I have worked is a motile organism isolated from water. It is a rather long bacillus provided with one or two terminal flagella, negative to Gram's stain, and forming a feeble orange pigment. I identify it with the organism described as "bacillus fluorescens aureus." My strain is incapable of growth at body temperature.

These two psychrophil bacteria, the first two which chanced to present themselves, were inoculated in large living doses into rabbits, and the succeeding phenomena studied just as I should have studied those due to an important pathogenic species. The following differences at once became apparent. The injection of micrococcus citreus agilis into the circulation caused no leucopenia, but was

followed by a moderate leucocytosis. Nothing approaching anaphylactic shock was ever seen with this organism. B. fluorescens aureus, on the contrary, caused a definite though delayed leucopenia even on the first injection; the total leucocyte count fell from 9200 per cubic millimetre before inoculation to 1800 in two and a half hours; the subsequent leucocytosis was slight. And on each of the two occasions on which I injected the bacillus into the rabbit there was a marked dyspnœa in a few hours.

I wished to know whether these differences were associated with the presence of a lytic antibody in the serum in one case and not in the other, and Dr. Gordon very kindly undertook this investigation for me, carrying it out with all the details and controls prescribed by the classical method of performing Wassermann's reaction. I furnished him with sera from an animal twice immunised against B. fluorescens aureus, and from one three times immunised against M. citreus agilis, together with serum from a normal rabbit as control; at the same time I gave him suspensions of the respective micro-organisms in normal saline. His results were unequivocal. The animal immunised against B. fluorescens aureus had in its serum a lytic amboceptor against this organism; that immunised against M. citreus agilis had none.

I next instituted experiments on the bactericidal power of normal and immune rabbit's serum against these two bacteria, using Wright's method. A preliminary experiment showed that B. fluorescens aureus perished completely when an emulsion was incubated for 17 hours at 37° C. without the addition of serum, whereas M. citreus agilis survived, though in somewhat reduced numbers. I therefore modified Wright's technique by carrying out the experiments in a 20° C. incubator, in addition to a similar set at 37° C. Neither at 20° C. nor at 37° C. was there any evidence of bactericidal power against micrococcus citreus agilis in normal or immune serum. With B fluorescens aureus no result could naturally be obtained at 37° C., since the temperature alone killed, but at 20° C. there was evidence of a very marked bacteriolytic effect, both on the part of normal and of immune serum, no definite difference being found between the two.

I now turned to the opsonic effect of normal and immune serum upon these two bacteria and found differences no less striking. I tested them as regards spontaneous phagocytosis—i.e., in the absence of serum—and also as regards opsonic action with both normal and immune rabbit's serum, using the same human leucocytes, washed four times, for all the experiments. Micrococcus citreus agilis proved wholly insusceptible to spontaneous phagocytosis; not a single coccus was found ingested in a hundred consecutive polynuclear leucocytes. In presence of normal serum 232 were found ingested by 100 leucocytes, and in presence of immune serum 358. The latter number was swelled by the presence of several leucocytes containing 40 and even 50 cocci apiece. If no cocci over ten were counted in any given leucocyte (and none such were found with normal serum) the number found with immune serum fell to 269.

B. fluorescens aureus, on the other hand, was readily susceptible to spontaneous phagocytosis. In absence of serum 116 bacilli were found ingested by 100 polynuclear leucocytes, and by a curious chance the numbers obtained with normal and immune serum were equal—274 in each case.

These results are very striking. I was aware that differences of this kind existed amongst pathogenic bacteria, but I was surprised to find them so well marked in harmless species. In the absence of any possibility of aggressins or specially evolved toxins in such psychophil bacteria it is natural to refer the differences in the reaction of the body to some fundamental diversity in the chemical nature of the bacterial protoplasm in the two cases, or at least to the presence of some constituent of the protoplasm in the one which is absent in the other. The subject is one which seems well worth further investigation, and I should judge it possible to approach it from the chemical side.

Turning now to the reactions of the body against the better known pathogenic species of bacteria we find that differences exist such as I have just described, but even more strongly marked. It is worth while to consider these differences in some detail.

PYOGENIC COCCI.

The pyogenic cocci form a group which may be taken together, since the response of the body to their presence seems similar in all cases. Putting together the well-established clinical facts as regards human infection by these organisms, and the numerous experimental observations which have been made by animal inoculation, and adding the various observations which I have brought before you in these lectures, it seems possible to lay down the law with some confidence as to the means of defence employed against them by the body.

This defence is not only essentially phagocytic and dependent upon the activities of the polynuclear leucocytes, but it is also, in the main, opsonic. The arguments in favour of this view may be summarised as follows. Dealing first with negative evidence, it seems clear that the pyococci form no soluble toxin, and that antitoxic defence, in the sense in which we see it in diphtheria and tetanus, is out of the question. That endotoxins are present in the bacterial protoplasm is likely enough, but we are not in a position to affirm the provision of antibodies to neutralise them. Again, there is good evidence that the body deals with the pyogenic cocci by lytic action feebly or not at all. Experiments with serum *in vitro*, even with highly immune serum, show little or no bactericidal action upon these cocci. Wright's method of measuring bacteriolytic power has, in his and in all other hands, yielded negative results. Gordon and I have attempted to show by another method that in the early hours of contact between serum and staphylococci there is a distinct and often a marked decrease in the numbers of the cocci: it is possible that some minor degree of defence is thus explained, but we have never affirmed that this could be the main mechanism upon which the body relied for its protection. In the experiments as regards anaphylaxis, which I have detailed in preceding lectures, I have shown that initial leucopenia is almost absent with the pyogenic cocci, except in the highly immune animal. Even in such an animal the symptoms of anaphylactic shock are trivial or absent, and if the views I have expressed as to the nature of this phenomenon have any truth in them, this fact may be held to negative the idea of a lytic antibody as of serious importance in defence. Agglutination also, for what it is worth, is so capricious a phenomenon in relation to the pyogenic cocci as to be practically negligible.

On the other hand, the positive evidence which can be brought forward as regards phagocytic defence against these cocci is overwhelming. In almost every infection in which they are concerned, even when it is a secondary infection, we see a prompt polynuclear response. The only exceptions are grave septicæmias without local lesion: the strains of pyococci capable of producing such a result are of exceptional virulence. The visible polynuclear response seen in almost all infections by pyogenic cocci is in the first place *local*—i.e., there is an accumulation of these cells at and around the seat of bacterial invasion as a factor in the process of acute inflammation. In the second place, it is *circulatory*; in all but the most trivial infections we find a polynuclear leucocytosis. Lastly, it is *medullary*; the bone marrow undergoes a neutrophil leucoblastic change within a day or two of serious pyococcal invasion. It is inconceivable that the polynuclear leucocytes and their mother tissue should behave thus unless their functions lay at the foundation of bodily defence.

At the same time there is irresistible evidence of the coöperation of a humoral element in the defence. With all pyogenic cocci spontaneous phagocytosis is practically absent in experiments *in vitro*. It is abundantly proved by the labours of Wright and his disciples, and confirmed by every one who has worked at the subject, that the opsonic action of the serum is needful before phagocytosis can take place. It may be that in immune serum there is an opsonin differing in its nature from that of normal serum, as Muir and Martin have maintained. It is one of the difficulties which we encounter, in endeavouring to explain opsonins as lytic antibodies in another guise, that opsonic action is most signally manifest in the case of the pyogenic cocci, against which lytic action is feeble or absent.

I am therefore ready to accept the opsonic index in these infections as an important indication as to the degree of immunity in any given case. It is true that it measures only one factor in a complex process, but it is a very essential factor. I have already stated my reasons for not attributing exclusive importance to the opsonic index; I assign also much importance to the anatomical substratum of immunity.

THE TUBERCLE BACILLUS.

The mechanism of defence against the pyogenic cocci has been seen to present no apparent difficulty in explanation. It is otherwise when we approach the micro-organisms concerned in the causation of the infective granulomata. Some of these affections, such as actinomycosis, are largely suppurative, and here the polynuclear leucocytes are presumably concerned, much as they are in infections with the pyogenic cocci. But in regard to the two commonest and best known infective granulomata this is by no means the case. Syphilis and tubercle are almost non-suppurative affections: the so-called "pus" of chronic lesions is mostly, though not entirely, necrotic and softened tissue débris. True suppuration in these diseases is usually due to secondary infection with pyogenic organisms.

I do not propose here to consider the nature of the bodily defence in syphilis. The disease is not one which lends itself to laboratory experiment in this country, where the higher apes are hard to procure. I will only say that the clinical and histological evidence obtainable from cases of human syphilis suggests in the strongest possible way that the polynuclear leucocytes play no part whatever in defence. Apart from accidental complications polynuclear leucocytosis is a phenomenon practically unknown in syphilis. In the histology of syphilitic lesions the polynuclear leucocyte takes no part; this cell seems to stand aside from the conflict during the whole course of syphilis, and to play no part in the manifestations of the disease at any stage. If any leucocyte plays a part it would seem to be the lymphocyte.

Tubercle, on the contrary, lends itself well to investigation, and there is a considerable body of experimental, as well as of clinical, evidence to guide us in framing our views as to the nature of the defence offered by the body against the bacillus. I will consider first the clinical facts. It is habitually asserted, and I believe it to be true, that in acute tuberculous affections, without secondary infection, polynuclear leucocytosis is absent. This is the opinion of most of the observers who have studied the subject, amongst whom I may mention von Limbeck and Cornet. In pulmonary tuberculosis secondary infection can, of course, rarely be excluded; even in tuberculous meningitis a secondary streptococcal infection of the meninges is not infrequently found post mortem, when it had not been suspected during life; the high polynuclear counts occasionally found in meningitis may thus perhaps be explained. It is now part of the ordinary routine of clinical pathology to make a cytological examination of fluids withdrawn from the various cavities of the body for purposes of diagnosis, and the student is rightly taught that tubercle, whether of the peritoneum, pleura, or meninges, is associated with a lymphocytosis rather than with an increase in the polynuclear leucocytes.

The histological study of tuberculous lesions is emphatic in disclaiming any participation of the polynuclear cells; they form no part of the structure of a miliary tubercle, and even in a tuberculous "abscess" they are habitually sparse. The cells of a miliary tubercle are essentially fixed tissue cells—endothelial and connective tissue in nature, with a certain number of lymphocytes. The clinical evidence, as a whole, offers no suggestion that the body relies upon its polynuclear leucocytes in defence against the tubercle bacillus.

The experimental evidence connecting the polynuclears with defence against tubercle is not abundant or convincing. It is true that these cells will swallow tubercle bacilli *in vitro* if they are presented in company with a suitable opsonin, but they will swallow almost anything. It is also true that a similar phagocytosis occurs *in vivo* when tubercle bacilli are introduced into the body, but this seems an initial phenomenon only. I have seen it in the rabbit after the intravenous injection of bovine tubercle bacilli; the polynuclear leucocytes impacted in the lung may contain the bacilli after 15 minutes. Kisskalt has described it in mice cutaneously inoculated with human tubercle bacilli,[2] but, though he found phagocytosis of the bacilli by polynuclear leucocytes in the earlier stages, these cells were in a few days supplanted by large mononuclear cells which took up the work of phagocytosis. I have never succeeded in producing more than a trivial leucocytosis with killed tubercle bacilli in the rabbit, and even a prolonged course of intravenous vaccine treatment failed in this animal to excite any leucoblastic reaction in the marrow. It is stated that after injection of tuberculin there is a circulatory leucocytosis (in which the eosinophils take part) during the height of the reactive fever, but it appears to be a transitory phenomenon. On the other hand, there is abundant histological evidence that in established experimental tuberculosis in animals the polynuclear leucocytes play no more part in the lesions than they do in human tubercle.

A dispassionate survey of the preceding facts must, I think, from the strong contrast which they offer with those seen in the case of infections with the pyogenic cocci, convince us that in tubercle, as in syphilis, the polynuclear leucocyte takes little part in bodily defence. This seems essentially a function of the fixed tissue cells. The first reaction which appears to occur when a tubercle bacillus lodges in a lymphatic gland or elsewhere is a proliferation of the local endothelium, and when, in a favourable case, a local infection is overcome it is the connective tissues which wall in the caseous focus and reduce it to impotence.

What, then, is to be said of the tuberculo-opsonic index? Here I find myself confronted with a paradox which I cannot pretend to solve, and which has long been a stumbling-block to me. I cannot resist the evidence that the opsonic index is of value in the diagnosis of tubercle, and although I confess that I cannot see eye to eye with those who claim it as indispensable in controlling the dosage with tuberculin I freely admit that here, too, it has proved of use. But the tuberculo-opsonic index measures immunity by the behaviour of a cell which plays no apparent part in serious defence against tubercle. It may be that opsonin is essential to the ingestion of bacilli by the fixed tissue cells. I do not know that proof of this has ever been brought forward, nor do I know that bacilli engulfed by the fixed tissue cells are destroyed; more often it would seem to be the cell which perishes.

This difficulty has not, I think, received sufficient consideration by the opsonic school; the admitted usefulness of the opsonic index requires some explanation in view of the fact that nearly all that we know of pathological cytology points away from the polynuclear leucocyte as a factor in defence against tubercle. There is a possibility, at which I have before hinted, that some antibody which is evoked in immunisation against tubercle possesses, as an accessory property, the power of opsonic action, and that the opsonic index thus measures immunity indirectly.

BACILLUS COLI AND ITS ALLIES.

In this group, including not only B. coli but the typhoid bacillus, the dysentery bacilli, Gärtner's bacillus, and the paratyphoid organisms, we find a scheme of bodily defence which seems to differ from both those already discussed. This group of bacteria shares with the cholera vibrio the faculty of evoking the production of lytic antibodies to a degree which has no parallel amongst the pyogenic cocci. Even normal serum may possess well-marked bacteriolytic power against these organisms and in immunity the power is greatly increased. The existence of lytic antibodies probably explains why anaphylactic phenomena are especially well marked in animals immunised against the members of this group.

But although lytic action is readily witnessed in the test-tube, there is reason for the belief that in the living body, even though the serum be richly furnished with lytic antibodies, phagocytosis and intracellular destruction also take place freely. In the serous cavities of an immune animal lysis is doubtless seen, but it has been questioned how far it occurs in the tissues, even in the immune—much more in the normal animal.

If we look at the clinical evidence we find that most of the bacteria belonging to the colon group have some power of exciting suppuration. In acute infections with B. coli itself pus may be completely absent, as is occasionally seen in cystitis; but in chronic coli infections suppuration is common. I will not speak of perforations of the gut, because the infection is here a mixed one, at least at the outset. But suppurations due to an unmixed infection with B. coli or its near allies are commonly seen in chronic cystitis, in chronic inflammations of the bile passages, and

[2] Zeitschrift für Hygiene, Band xlv., No. 1.

elsewhere; the cells in the pus are in such cases true polynuclear leucocytes, and phagocytosis can often be demonstrated. Again, in typhoid cystitis a true pyuria is present, and from the purulent lesions of post-typhoidal periostitis one may obtain pure cultures of the typhoid bacillus. I need not multiply examples; it is clear that the polynuclear leucocytes play some part at least in defence against this group of organisms, though perhaps chiefly in chronic infections.

Nevertheless there is a great difference between these infections and those due to the pyogenic cocci as regards the changes seen in the blood and in the bone marrow. It is well known that in typhoid fever there is no circulatory leucocytosis. It is indeed asserted that in the very earliest stages of this disease the polynuclear leucocytes are increased, but I have never had an opportunity of verifying this. In practically every case of uncomplicated typhoid fever that one sees the circulatory polynuclears are not only not increased but actually lowered in number—often to 1000 or 2000 per cubic millimetre. Again, in chronic urinary infections with B. coli, though pus may be passed in large amounts, I have never found any marked polynuclear leucocytosis in the blood.

In experimental rabbits treated with intravenous doses of living and dead colon bacilli, Gärtner's bacillus, and B. typhosus I have indeed regularly noted a polynuclear leucocytosis, often a high one, following the anaphylactic leucopenia, but it is a transient affair, and I believe it to be a reaction following the leucopenia rather than a serious attempt at phagocytic defence. I have never found a leucoblastic reaction in the marrow of animals thus treated.

The colon group of bacilli would thus appear to differ from the pyogenic cocci in several important respects as regards the defensive mechanisms they excite. Certain humoral responses, notably agglutination and bacteriolysis, are better marked than with most other bacteria, and in spite of the fact that it is difficult to prove that these actually play their part in the tissues, it is equally difficult to believe that they have no meaning. The evidence as regards opsonic response is difficult to appraise, but I am disposed to attach less importance to it than in the case of the pyogenic cocci. And although these bacteria may excite suppuration in certain cases the absence of a constant polynuclear leucocytosis in the blood, and of a leucoblastic reaction in the marrow, forbids us to believe that the polynuclear cells are of more than subsidiary importance in defence.

We have thus in the pyogenic cocci, in the members of the colon bacillus group, and in the microbes of tubercle and probably also of syphilis, examples of micro-organisms against which the body seems to defend itself in very different fashion. So far as the polynuclear leucocytes are concerned, we seem entitled, from the facts I have reviewed, to conclude that these cells are of fundamental importance in defence against the pyogenic cocci, of merely secondary importance in the case of the colon group, while in tubercle and syphilis they seem to play almost no part at all. These three groups of bacteria by no means include all those of serious pathogenic importance, but they are those with which I have chiefly worked, and the short time at my disposal prevents me from dealing with such groups as the pre-eminently toxic bacteria in which yet other means of defence come into play.

At the present day it is almost superfluous to urge that no one theory of immunity can meet all the facts. The reactions between the body and its invaders are manifold and complex, and must be viewed from many sides if their meaning as a whole is to be fully grasped. Truth is a gem, cut by many different workers, each intent upon the facet on which he is himself engaged, striving to smooth and polish it that he may gaze into the interior. The view thus gained is too often but a partial one. Another, working at a different facet, may gain a glimpse of the same facts, but in an altered light, and may formulate a very different theory to explain what he sees. Yet little by little the crystal becomes cut and polished till in the end we may hope to view it as a perfect whole. My humble effort in these lectures has been to peer through only one facet in the crystal of truth, that at which I have lately been engaged in working. I am not blind to the fact that there are other facets of equal importance, but I shall have succeeded in my aim if I have attracted renewed attention to the significance and value of the anatomical element in immunity presented by the leucocytes.

THE ASPECTS OF DISEASE.[1]

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WHEN honoured by the request of your President to read a paper before this society I was in some difficulty to determine upon what subject I might venture to claim the privilege of your attention, but it occurred to me that perhaps if instead of treating of some limited surgical or pathological problem I asked you to consider with me a topic in which both medicine and surgery were concerned, I might hope to engage more general interest. And if in the course of my paper I allude to matters which belong more strictly to the medical side of our profession, I would ask your toleration and beg you to consider that since our work has become so complex and extended that some subdivision is inevitable, there is an increasing danger of contentment with a narrow and restricted view, as an antidote to which it is much to be desired that in whatever department of practice we may be engaged we should be in touch with the work of our colleagues in other directions.

I wish, then, to speak to you very briefly upon the aspects of disease as recognisable by that most beautiful and delicate of all instruments, the human eye—an instrument which you always carry with you, and which is capable of detecting many things not appreciable by any other instrument, the use and accuracy of which can be greatly improved by care and practice, and the value of which will remain, whatever other aids may be furnished us by advancing science.

Please do not suppose that I wish to depreciate the value of the many admirable contrivances which we have at our command to aid us in the observation and diagnosis of disease and injury; I only wish to recall your attention to the value of what we can see with the eye assisted only by the intelligence, and to show that there are some things better estimated by the eye than by any mechanical or artificial instrument. You will remember that Addison said: "Everyone is in some degree a master of that art which is generally distinguished by the name of physiognomy,"[2] and I would ask you to consider first what may be learned from the expression of the patient's face and the condition of the visible muscles.

Sir Charles Bell in his book "On the Anatomy and Philosophy of Expression" points out that "the motion of one part of the body produced by the excitement of another, and the movements produced by passion on the frame of the body, become *symptoms* when caused by disease";[3] and although these are but a part of the available evidence, "yet that partial view is attended with a train of consequences which none can perceive but those who are acquainted with the secret ties which bind the parts together."[4] And he gives as an example the fatal pneumonia after operation or injury which may occur with "no violent pain, no cough, no inflammatory pulse; you observe only a tremulous motion and swelling of the upper lip and working of the muscles of the nostrils," to which he might have added an expression of anxiety and a dusky complexion. Then Sir Charles Bell continues: "When we learn that the muscles about the lips and nostrils are respiratory muscles, and when we know that a respiratory nerve goes purposely to combine these muscles with the motions of the thorax, and above all when by such investigation of the anatomy, we find that these same motions indicate some powerful emotions of the mind, are we not prepared to be more attentive observers, and to discover such symptoms as must remain obscure to those who have no clue to them."[5]

But to obtain the full value of such observations we must be, as Sir Charles Bell says, "*attentive* observers," and we must learn to interpret correctly the expressions which we observe. We must have "the clue to them." We must endeavour to observe as one—

> "Who looks
> In steadiness, who hath among least things
> An undersense of greatest; sees the parts
> As parts, but with a feeling of the whole."[6]

[1] A paper read on March 10th, 1910, before the St. George's Hospital Hunterian Society.

[2] Spectator, No. 86.

[3] Essays on the Anatomy and Philosophy of Expression, by Sir C. Bell. Second edition, 1824, p. 13.

[4] Ibid., p. 15.

[5] Ibid., p. 16.

[6] Wordsworth, Prelude, Book vii.

I would remind you that our pathological studies, the value of which cannot be over-estimated, yet show us the results only of disease, not disease itself, which can only be studied in the living; but the expression or aspect of a patient will often give us signs of disease as it exists in the living which our imagination may connect with its results as seen in the dead. As Shelley said, "Reason is the enumeration of quantities already known; imagination is the perception of the value of these quantities both separately and as a whole."[1]

You may often see in the face, not only the mental character, but also the pathological character of a patient. For instance, a person whose expression shows the mental capacity for endurance may show in his face indubitable signs of premature age which we may translate into an indication of early degeneration of all the tissues of the body—the arcus senilis, tortuous temporal arteries, shrunken skin.

The expression of a person in severe pain is very striking: the lips retracted, the teeth clenched, the brow contracted, the nostrils dilated and quivering, the whole body restless except perhaps one limb or one set of muscles. It must be remembered, however, that although pain of short duration may be a stimulant, severe pain long continued is extremely depressing; and then the expression of the sufferer is quite different, and becomes that characteristic of depression, with possibly occasional brief recurrences of the restlessness described above. The condition has been well described by Darwin:—[2]

> After *prolonged* suffering the eyes become dull and lack expression, and are often slightly suffused with tears. The eyebrows not rarely are rendered oblique, which is due to their inner ends being raised. This produces peculiarly grooved wrinkles on the forehead which are very different from those of a simple frown, though in some cases a frown alone may be present. The corners of the mouth are drawn downwards. ..... The breathing becomes slow and feeble and is often interrupted by deep sighs.

How changed is the expression of the same patient when the pain has been relieved or brought to an end. The lengthened face expands, the head is held erect, the frontal muscle contracts, smoothing out the wrinkles of the brow and arching the eyebrows, the eyelids are raised, and the nostrils and the angles of the mouth relaxed. In children prolonged pain often gives rise to a pathetic expression of appeal (as though asking for help or relief), and when relief comes the expression of joy is more marked than in adults; the eyes brighten, the colour rises, and the corners of the mouth are retracted to the extent of a smile.

How often you must have recognised at once upon entering the sick-room, and without asking a single question, the improvement or declension in the patient's condition by simply observing such changes of expression as I have described, especially if the patient be a child. Children are especially worth study in this respect, for they do not try to conceal their feelings or control their expression, so that we can depend upon the tale told by their faces and are not liable to be led astray by the tale told by their tongues, as we sometimes are with adults. I consider that the two years that I lived in the Hospital for Sick Children, Great Ormond-street, as house surgeon and sole resident medical officer taught me more than any other two years of my professional life, and I shall never forget the lessons learned from the careful observation of the aspect of some of the children I then tended.

In interpreting the expression of children we must, of course, bear in mind that in them the nervous system, especially the sympathetic, is extremely sensitive; that they are especially liable to disease of *one* organ; and that they exhibit in a peculiarly marked manner the signs of the profound diathetic diseases, such as syphilis, tuberculosis, rickets. I know nothing more characteristic of the facies of disease than that of a child the subject of congenital syphilis. You are all familiar with the shrivelled appearance of old age, the dull brown complexion, the snuffling and discharging nose, the sore lips of the infant; and later on the sunken nose, the hazy corneæ, and the small grey and notched teeth. How unmistakeable, too, is the facies of rickets: the projecting forehead and small face, the flat and perspiring head, the open fontanelles, the languid expression, and the manifest objection to being handled.

I would, moreover, remind you how much may be learned of the condition of children by simple inspection if they are completely uncovered and allowed to be undisturbed in a cot. The decubitus of rickets is very characteristic, the child lying upon its back with the legs crossed, and the thighs flexed upon the abdomen. At a children's hospital you could always pick out the rickety children on going through the wards at night by most of them having kicked off the bed-clothes and assumed the position I have described. Then if one looked a little closer one would see the beaded ribs, the pigeon breast, the prominent abdomen, the enlarged wrists, and the bowed legs.

Contrast with this the child with tubercular meningitis, lying curled up in bed, the head buried in the pillow, the face flushed, the skin hot and dry, the knit eyebrows, the intolerance of light, the squint, the pulsating carotids, the irregular breathing, and the retracted abdomen. Or take a case of hydrocephaloid disease, described so well by Dr. Marshall Hall. The child who has been suffering from continued diarrhœa, and from whom you may probably detect the smell of a foul motion, lies in a dozing condition alternating with occasional restlessness, the face pale, the eyes sunken and devoid of speculation, the fontanelle depressed, the lips dry and parched, the breathing shallow and hurried. Here the expression is one of vacant indifference, whereas that of the child with meningitis, except in the very late stage, is that of irritability and hypersensitiveness to light, frowning, shutting the eyes, and with the lips retracted and the teeth clenched.

Then again, the aspect of the child with large tonsils and post-nasal adenoid growth, with its pinched nostrils and open mouth, is unmistakeable. Or look at the child with scrofulous ophthalmia, with its sticky eyelids half closed, its face turned from the light, and the eyes shaded by one hand while the other hand scratches the head on account of the irritation of impetigo; one sees also some enlarged cervical glands and some redness and swelling of the alæ nasi.

Note also the expression of the child who is myopic, the contracted brow and eyelids, and the stooping posture to bring the head near the book or toy. Or, on the other hand, the presbyopic child with wide open eyes and commencing squint. The deaf child, apparently inattentive and stupid, with raised brow and head held upward and forward, has another and equally significant aspect.

Chorea is a disease which gives a peculiar facial expression to the affected child. I think I should describe it as an irresponsible or, in severer cases, a somewhat imbecile aspect, with, of course, the grimacing and jerky movement increased if called upon to speak or act. And how striking is the aspect of the child with croup or other laryngeal obstruction; sitting up in bed, the head thrown back, the face suffused and perspiring, and with distressed and anxious expression; the lips livid, the chest heaving, the supraclavicular and intercostal surfaces receding with inspiration, the sibilant breathing, the ringing cough, and the hoarse voice.

The aspect of the cretin is usually sufficiently diagnostic; the stunted, ill-developed, stupid-looking child, with dull, flabby skin, thick lips and tongue, puffy face and neck, and awkward speech and manner. The idiot, too, is usually, even in infancy, recognisable; the small and often unnaturally shaped head rolling about from side to side, the want of speculation, of recognition, or of appreciation in the face, the vacant smile, the slobbering lips. It is curious that the mother, perhaps because the wish influences the judgment, often describes such a child as unusually intelligent, though she may be anxious about its delayed effort at speech or some other deficiency. I have often had children whom I at once saw to be idiots brought to me because of the absence or imperfection of speech, with the idea that there was some defect of the palate or mouth that might be remedied by operation, and which accounted for their condition.

Of course, I need not remind you how various joint diseases, bone affections, and paralyses may be recognised by observing the naked child; how, for instance, early hip disease prevents the complete flexion of the thigh upon the pelvis, while the sound limb is flexed and rotated with evident pleasure; how the stiff neck and avoidance of rotation of the head are indicative of cervical spine disease; how the unmoved or carefully held limb may point to epiphyseal or periosteal disease; and how the inequality of

[1] Shelley, Defence of Poetry.
[2] The Expression of the Emotions in Man and Animals, p. 179.

muscular action and the wasted limb may reveal the area of infantile paralysis.

Turning now from children to adults we have, of course, to remember that the expression of the face in adults is less reliable than in children because of their powers of control and even of deception. Still much may be learned by careful observation, and practice will enable you to detect deception and exaggeration, and to make allowance for sources of error.

I confess that Lavater[9] seems to me to have exhibited too complete a confidence in his power of reading the face and that his interpretations are sometimes erroneous. But he warns the physician of the danger of treating disease according to its specific class without adapting his prescriptions to the character of the patient as exhibited in the physiognomy. Duchenne's[10] researches have done much towards the determination of the muscles involved in the facial expression of the emotions, and studies of this kind may usefully be borne in mind. But the careful observation of the aspects of disease helps us to interpret the divergencies from the natural conditions and to recognise the changes associated with particular diseases.

We should, most of us I think, recognise the dyspeptic, with the thin, pale face and the red-tipped nose; or the albuminuric, with pale, puffy face and swollen feet; or the neurotic, with furtive glance, quivering eyelids, blushing skin, and intense pose. The habitual drunkard, too, is generally recognisable, his fat form, his bulgy face, his bleary eyes, his hypertrophied and reddened nose are features often accentuated by his hesitating and undecided manner and the smell of alcohol about him.

So also the large eater who leads a sedentary life may show in his face the condition of general plethora. Sir Thomas Watson, whose descriptions of the aspects of disease are unequalled, thus describes him:—

> Persons thus circumstanced are apt to grow fat, the adipous tissue seeming in these cases to form a kind of safety-valve for the diversion of the superfluous blood. Such persons have turgid or florid cheeks, red lips, red mucous membranes, and not uncommonly ferrety eyes. Their entire vascular system is preternaturally distended.[11]

Sir James Paget, another great artist, has admirably described the two types of senile degeneration:—

> Some people (he says) as they grow old seem only to wither and dry up; sharp-featured, shrivelled, spinous old folk, yet withal wiry and tough, clinging to life, and letting death have them, as it were, by small instalments slowly paid.
>
> Such are the "lean and slippered pantaloons" and their "shrunk shanks" declare a pervading atrophy.
>
> Others, women more often than men, as old and as ill-nourished as these, yet make a far different appearance. With these the first sign of old age is that they grow fat; and this abides with them till, it may be, in a last illness sharper than old age, they are robbed even of their fat. These, too, when old age sets in become pursy, shorted-winded, pot-bellied, pale, and flabby; their skin hangs, not in wrinkles, but in rolls; and their voice, instead of rising "towards childish treble," becomes gruff and husky.
>
> These classes of old people may represent the two chief forms of atrophy; of that with decrease and that with fatty or other degeneration of tissues. In those of the first class you find all the tissues healthy, hardly altered from the time of vigour. I examined the muscles of such an one—a woman, seventy-six years old, very lean, emaciated, and shrivelled. The fibres were rather soft, yet nearly as ruddy and as strongly marked as those of a vigorous man; her skin, too, was rough and dry; her bones, slender indeed, yet hard and clean; her defect was a simple defect of quantity and of moisture.
>
> But in those that grow fat as they grow old, you find, in all the tissues alike, bulk with imperfect texture; there is fat laid between, and even within the muscular fibres; fat about and in the fibres of the heart, in the kidneys, and all the vessels; their bones are so greasy that no art can clean them; and they are apt to die through fatty degeneration of some important part, such as the heart, the minute cerebral blood-vessels, or the emphysematous lungs. The defect of all these tissues is the defect of quality.[12]

That a patient is suffering from hæmorrhage may be indicated by the waxy pallor of the face, and the white lips and conjunctivæ, which may be exhibited by a person who is unaware of the loss of blood owing to the hæmorrhage being internal.

The diagnosis of internal cancer may sometimes be assisted by the sallow complexion and emaciated face of the sufferer. I need only mention the staining of jaundice, the patchy redness of hectic, the pigmentation of Addison's disease, the eruptions of the exanthemata of syphilis and of the various diseases of the skin, as conditions the observation of which may at once lead us to a diagnosis.

May we not be helped by noticing the distressed and dusky face, the dilated and moving nostrils, the dry herpetic lips, the dull staring eyes, and the rapid respiratory movements, as suggestive of pneumonia; or the venous and purple face and swollen lips of chronic heart disease? Or have we to interpret the serious meaning of the Hippocratic facies,[13] with sharp nose, hollow and sunken eyes, cold and shrivelled ears, dry and rough skin, and green, black, livid, or lead-coloured countenance, as presented by Falstaff when he made his end "at the turning o' the tide," with "his nose as sharp as a pen," and "babbling of green fields"?

Or may I quote Sir Spencer Wells's description of the *facies ovariana*?

> The emaciation, the prominent or almost uncovered muscles and bones, the expression of anxiety and suffering, the furrowed forehead, the sunken eyes, the open sharply-defined nostrils, the long compressed lips, the depressed angles of the mouth, and the deep wrinkles curving round these angles form together a face which is strikingly characteristic.[14]

Then how much may be learned from the eye; its sensitiveness or insensibility to light, the injected or pale conjunctiva, the dilated, contracted, irregular, or unequal pupils; and from the eyelids, puffy, or shrunken, or paralysed. Besides the protrusion of exophthalmic goitre one may see the globe pushed forward by tumours of the orbit and of the antrum. And we may see the globe sunken into the orbit by emaciation or by rapid loss of fluid.

The widening of the nostril due to the presence of polypi is very notable and gives a peculiar character to the face. The drawing of the mouth to one side and the open eyelid may unmistakably indicate paralysis of the facial nerve; as the drooping lid and outward divergence of the globe may point to paralysis of the third nerve.

The onset of tetanus may be detected by the sardonic expression given to the face by the contraction of the muscles of the mouth. I have seen this and slight stiffness of the neck the only symptoms indicative of the oncoming of fatal tetanus, the patient asserting cheerfully that there was nothing the matter with her but a slight cold and a little wound of no consequence. I ought, however, to mention that I have seen firm closure of the jaws of a youth due to the reflex irritation of a cutting tooth; but though the jaws were firmly closed there was no retraction of the angles of the mouth and therefore no risus sardonicus.

The swollen, spongy, purple, and bleeding gums and sallow complexion of scurvy are obvious signs of the disease, and may help towards the interpretation of bruises upon various parts of the body.

So far, I have dwelt chiefly upon the aspect of the face and what may be learned therefrom in disease, because I think the study of the face is especially interesting and instructive. But I need hardly say that there is much to be learned by the observation of the rest of the body. The carriage and gait of a patient will often tell you much; of weakness and fatigue, of paralysis, of joint trouble, of abdominal tumour, of cerebral disturbance. As the hand is given you, you may notice the clubbed fingers of chronic dyspnœa, the enlarged joints of osteo-arthritis, or the chalk stones of gout. On looking at the chest you may observe the beaded ribs and pigeon breast of rickets, the flattened infra-clavicular region of phthisis, the barrel chest of emphysema, the bulging lower right ribs from enlargement of the liver. The outline of the abdomen may suggest disease of the contained viscera, the pregnant uterus, or the distended bladder; and the enlarged and tortuous veins on the surface may tell of obstructed vena cava or iliac vein.

The lower limbs may give evidence by wasted muscles or arrested growth of paralysis or joint disease, or by the nodulated great toe of the gouty diathesis, or by the puffy and œdematous ankles of renal disease, or by the periosteal thickening of the shin of syphilis, observations which may be found especially useful in examining patients for life insurance.

So again, in medico-legal cases the presence and colour of a bruise may enable us to form a shrewd guess as to the

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[9] Lavater: L'Art de Connaître les Hommes par Physiognomie, Paris, 1806.

[10] Duchenne: Mécanisme de la Physionomie Humaine, Paris, 1876.

[11] Principles and Practice of Physic, vol. i., p. 47, fourth edition.

[12] Paget: Lectures on Surgical Pathology, 1863, Edinburgh, p. 82.

[13] Prognostics, Adams's Translation, p. 236.

[14] The Diagnosis and Surgical Treatment of Abdominal Tumours, by Sir Spencer Wells, Bart., p. 11; Churchill, 1885.

nature and date of an injury.[15] The presence and aspect of a scar may also tell something of the nature and date of a wound. The depressed scars of glandular abscesses in the neck may hint at the probability of a tubercular tendency. And the scars of rupial ulcers may tell us of the infection of syphilis.

I mention all these points just to remind you how much of importance may be recognised by the eye alone; and I should like to quote one case to show how such an observation may help towards a correct diagnosis. A lady was brought to me by her medical attendant to consider the question of colotomy for the relief of malignant disease of the rectum. There were great pain, hæmorrhage, and some difficulty of defæcation, and an examination of the rectum revealed an extensive ulcerated growth. She had lost flesh and was of somewhat sallow complexion. But when the nates were uncovered for the examination of the anus and rectum I noticed some extensive rupial scars. This led to further investigation and inquiry, and I found that she had had numerous sores on various parts of the skin, and severe ulceration of the throat. This, and the resemblance of the rectal disease to ulcerated gummata, led me to the belief that the disease was syphilitic and not cancerous; and that this was so was proved by a cure resulting from a carefully carried out course of anti-syphilitic treatment.

Then there are the varied cases of glandular enlargement indicative of tubercular, malignant, or lymphatic disease; the tubercular glands tender, soon involving the superjacent skin, and suppurating; the malignant less tender, less defined, and tending to ulceration, not suppuration; the lymphatic disease leading to early fusion and loss of definition, with comparatively little pain.

I would point out that the presence or absence of shortening of a limb may often be more accurately determined by the eye than by any measurement, especially in the lower limb. I venture to assert that the accurate measurement of the lower limb is by no means easy. It is difficult to be exact as to the points of measurement being precisely the same on the two limbs; moreover, a little difference in the muscular development, which is very common, will furnish an error in the measurement of the length. This is not imaginary, for I can tell you of a case in which five hospital surgeons were in consultation over an obscure injury of the hip, and in which no two agreed as to the presence or amount of shortening as shown by tape measurement. It was then suggested that a straight line should be drawn between the two anterior superior spines absolutely at a right angle to the median line of the abdomen as determined by the eye, and the two limbs extended side by side, when it was at once obvious that the soles were not on the same level, because of some shortening of the limb.

So, also, a fracture of the neck of the thigh bone may be certainly detected by ascertaining in the same way the presence of shortening and the eversion of the limb; and thus painful and harmful manipulation is avoided, which in the case of impacted fracture is of the greatest importance.

To the trained eye the outline of a Colles's fracture of the radius, with the projection of the lower fragment on the back and outer side of the forearm and the prominent styloid process of the ulna, is unmistakable. As also, if seen early, is the outline of a Pott's fracture, with the projecting internal malleolus and outward displacement of the foot. Fractured ribs may be suggested by the immobility of one side of the chest, just as immobility and rigidity of abdominal muscles may indicate injury or inflammation of the subjacent viscera.

Evidently, then, the skilled use of the eye may not only greatly help us towards a correct diagnosis but may enable us to avoid what would often be a painful and sometimes a harmful examination, and may even, perhaps, preserve us from serious error.

But the aspects of disease have been observed and described by others besides medical authors, by artists—both poets and painters. You will remember the well-known lines of Sappho picturing a swoon, translated thus into verse by Dr. Walter Headlam[16]:—

> . . . . . "Utterance of word
> Fails me; no voice comes; my tongue is palsied;
> Thrilling fire through all my flesh hath run;
> Mine eyes cannot see, mine ears make dinning
> Noises that stun;
>
> The sweat streameth down—my whole frame seized with
> Shivering—and wan paleness o'er me spread,
> Greener than the grass; I seem with faintness
> Almost as dead."

There is also an almost exactly similar description by Theocritus in the "Magic Wheel," Mr. Andrew Lang's translation of which is as follows:—[17]

> I grew colder all than snow, and the sweat streamed from my brow like the dank dews, and I had no strength to speak; nay, nor to utter as much as children murmur in their slumber calling to their mother dear.

Or in Mr. Walter Headlam's verse:—[18]

> "I went cold all over as ice; and on my brow
> Moisture broke out heavy as beads of morning dew;
> And I had no voice to utter so much as even in sleep
> Murmuring to their mothers weary children do."

A case of septic phlebitis and pyæmia is most graphically described by Chaucer:—[19]

> "The clothred blood, for any leche-craft
> Corrumpith, and is in his bouk i-laft,
> That nother veyne blood, ne ventusyng,
> Ne drink of herbes may ben his helpyng.
> The vertu expulsif, or animal,
> Fro thilke vertu cleped natural,
> Ne may the venym voyde, ne expelle.
> The pypes of his lounges gan to swelle,
> And every lacerte in his brest adown
> Is spent with venym and corrupcion.
> Him gayneth nother, for to get his lyf,
> Vomyt up-ward, ne down-ward laxatif;
> Al is to-broken thilke regioun;
> Nature hath now no dominacioun,
> And certeynly wher natur will not wirche
> Farwel phisik; go bere the man to chirche."

And you remember Shakespeare's description of the strangled Gloucester:—[20]

> "But see, his face is black and full of blood,
> His eye-balls further out than when he lived,
> Staring full ghastly liked a strangled man;
> His hair uprear'd, his nostrils stretch'd with struggling;
> His hands abroad display'd, as one that grasp'd
> And tugg'd for life and was by strength subdued."

And what an idea of the misery of greatness ruined is given by Milton's description of the face of Satan:—

> "His face
> Deep scars of thunder had intrenched, and care
> Sat on his faded cheek."

There are many celebrated paintings depicting injuries and disease. Dr. Leonard Mark gave a most interesting address in 1906 on Art and Medicine,[21] in which he drew attention to some of the most remarkable of such pictures to be seen in the British galleries, of which Hogarth's "Pool of Bethesda" in St. Bartholomew's Hospital is a notable example.

I hope, however, that I have said enough to show that the aspects of disease are full of interest and are none the less worth study because we have also at our command a vast amount of valuable scientific apparatus. Moreover, it must be remembered that he who practises in the country, miles from a large town, must often have to make his diagnosis without much of the apparatus that we have available in our laboratories; that X rays are not always at hand; and that even the culture of bacilli and the ascertainment of opsonic indices may have to be discarded. And so what one can see and record with the eye may have a very special value.

I cannot help thinking that a careful and intelligent study

[15] A very interesting example of this is the evidence in proof of the murder by strangling of Sir Edmund Berry Godfrey in 1678. See The Popish Plot, A Study in the History of the Reign of Charles II., by John Pollock, Fellow of Trinity College, Cambridge, 1903, p. 99. Also the case of Sir Edmund Berry Godfrey, by John Pollock, in the Law Quarterly Review, October, 1906, p. 431.

[16] Paleness greener than the grass is a striking phrase concerning which Dr. Headlam points out that: "The hue of pallor, white in northerners and ashy in the negro, is in olive complexions yellowish or greenish; and accordingly comparisons which Greek and Latin used were pale as grass (Longus, I., 17), or gold (Catullus, lxiv., 100), or saffron (Aesch. Agam., 1110)," &c. A book of Greek verse, by Walter Headlam, Litt.D., Cambridge, 1907, p. 5 and p. 263, notes. See also a translation by A. Phillips, quoted in Croonian Lecture on Human Physiognomy, by Dr. James Parsons, Philosophical Transactions, 1746. See also concerning the green pallor, Hippocrates in the Prognostics quoted above.

[17] Theocritus: Translated by A. Lang, M.A., Golden Treasury Series. Idyll II., p. 16.

[18] A book of Greek verse, by Walter Headlam, Litt. D., p. 173.

[19] The Knight's Tale.

[20] King Henry VI., Pt. 2, III., ii., 165.

[21] Art and Medicine, by Leonard Portal Mark, M.D Bale and Danielsson, 1906.

of the facial expression and aspect of a patient may often tell us at once in what direction our inquiries should be made, may lead us towards the essentials and away from the accidentals of the case, may help us in assigning the relative value of the facts elicited by our scientific apparatus, and in interpreting correctly the history obtained; and may, moreover, happily prevent us from reaching up to what a skilful writer has described as "that condition of high scientific abstraction in which the sensitive, striving, shrinking human being is merged in the mere case; and the delicate opportunity of psychological observation is disregarded in a calm and somewhat cold-blooded desire to add a fact or two more to the records of experimental physiology."[22]

And now, gentlemen, I feel that most of what I have said can only have served to remind you of what you already knew and may therefore have found it tedious to listen to. But, as Dr. Johnson said, "What is obvious is not always known, and what is known is not always present," and so I hope that you will not think me unappreciative of the honour you have done me by inviting me to read a paper before this society.

ADMINISTRATIVE CONTROL OF PULMONARY PHTHISIS IN SCOTLAND.[1]

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1. *Historical.*—In the year 1902 the Local Government Board for Scotland, in response to various proposals by town and county public health authorities, considered in detail how pulmonary phthisis was affected by the Public Health (Scotland) Act, 1897. Lord Balfour of Burleigh was at that time His Majesty's Secretary for Scotland, and therefore *ex-officio* President of the Local Government Board for Scotland. All the elements of the phthisis problem were fully discussed by the Board and were considered in detail also by Lord Balfour himself. The general result is recorded in the Board's Annual Report for 1903, pp. 35-6. There it is laid down that phthisis is to be regarded as an infectious disease within the meaning of the Public Health (Scotland) Act, 1897. As that Act contains no definition of infectious disease the denotation of that term is to be determined by the scientific opinion of the day. Further, all local authorities for public health (that is, in Scotland, all the town councils and all the county district committees, the equivalent of the English sanitary authorities) are entitled to do for pulmonary phthisis all that they are entitled by statute to do for any infectious disease in the special circumstances and conditions in which its infectivity becomes operative. The medical member of the Local Government Board at that time was Dr. J. B. Russell, whose name is a revered name in the public health movement of Great Britain. He died in 1904.

In the three years following 1902 the Board were persistently asked to consider special questions, such as the legality of paying fees for voluntary notification of phthisis, the legality of establishing laboratories for examination of sputum, the legality of paying for sputum examined, the legality of using the wards in infectious disease hospitals for the isolation and treatment of phthisis, and the legality of adding phthisis to the list of diseases compulsorily notifiable under the Infectious Disease Notification Act, 1889. His Majesty's Secretary for Scotland for part of those three years was Lord Dunedin, who, both officially and personally, has powerfully supported the anti-tuberculosis campaign.

In 1905 several local authorities having, on various administrative issues, raised afresh the questions I have indicated, the Board reconsidered the whole legal position. At that date His Majesty's Secretary for Scotland and, therefore, *ex-officio*, the President of the Board, was the late Marquis of Linlithgow, one of the finest spirits that ever occupied a public office in this or in any other country. The Law Officers of the Crown went exhaustively into the individual questions raised. The result was the Board's circular of March 10th, 1906.

In the circular the great step taken in 1902 was followed by another great step, for the local authorities were told that not only were they under obligation to deal with phthisis as they dealt with other infectious diseases, but that the Board would be prepared to approve the addition of the disease to the list of diseases compulsorily notifiable under the Notification Act. This entirely new departure in official policy was due to the imprimatur of Lord Linlithgow himself, who had not only strong personal convictions on the problem of phthisis but felt that public opinion had sufficiently ripened to justify him in assenting to the proposal to furnish the local authorities with all the machinery available for the execution of their duties as determined in the great decision of Lord Balfour in 1902.

The resulting circular gathered into one coherent sequence all the leading administrative ideas. As the basis of a national scheme for realising the ends of the Public Health Act we adopted, overtly and frankly, the tested system advocated and developed by Dr. R. W. Philip in Edinburgh. As a deduction from the primary proposition that phthisis is an infectious disease within the meaning of the Public Health Act, we set forth the duties of disinfection, isolation, and treatment. We elaborated in some detail the functions of a dispensary, the varieties of possible hospital treatment available, and the need for a system of notification. Thus for isolation and treatment we showed that, as the experiments and experience of Dr. Philip, Dr. A. Newsholme, and others had demonstrated, hospitals might be classified into curative hospitals, all-day hospitals, all-night hospitals, convalescent colonies, work colonies, wards for educative treatment and control, and hospital wards for isolation of advanced cases. We fully detailed, on Dr. Philip's lines, the uses of dispensaries. But, as of equal and essential importance, we reminded local authorities that "these direct measures towards the control of pulmonary phthisis must be supplemented by indirect measures, the unremitting and systematic removal of nuisances, prevention of overcrowding, enforcement of good ventilation, reconstruction of insanitary houses, improvement of insanitary areas, improvement of drainage of soil and houses, stringent supervision of meat, of cowsheds, of dairies, cleansing of streets, proper disposal of refuse, &c. Direct prevention should go hand in hand with general sanitation."

Two years later—July 15th, 1908—the Board issued another circular, which summarised the work done by the local authorities as the result of the first. The record was of the most gratifying kind. But meanwhile another great step forwards had been taken. For it had been felt that certain clauses of the Public Health Act of 1897 were somewhat too inelastic to suit the peculiar conditions and the varied history of a disease like phthisis. In 1907, His Majesty's Secretary for Scotland, and therefore *ex-officio* President of the Board, Lord Pentland of Lyth, carried through a short relieving Act, whereby the over-stringency of the principal Act was adapted to the administrative conditions of all the infectious diseases common in the west, phthisis included. It can now with truth be said that, without unnecessary hardship to individuals, the full resources of the Public Health Law in Scotland can be brought to bear on every variety of pulmonary phthisis. Lord Pentland's short Act of three clauses adapting the Public Health Act fully and in detail to phthisis has, meanwhile, superseded the need for any special local legislation. Phthisis is in no sense a local disease; it is a national disease, and it is better that the country as a whole should advance along the lines made possible by the general law.

This short record brings us to the present date. The policy embodied in these various circulars and decisions has been justified by the event. I shall now indicate the leading results. Incidentally, I may take leave to add that the policy of the Board during these eight years has been—not, as some of our critics have hinted, the hasty and indiscreet application of doctrinaire ideas to a problem of great complexity, but—the well-considered policy of skilled statesmen, moving slowly and deliberately in response to ascertained social demands.

2. *Compulsory notification.*—In many localities voluntary notification systems have been tried, and in some localities they still continue. But experience has shown that voluntary notification is on the whole a failure. Now that the Public

[22] Lucas Malet in "Colonel Enderby's Wife."

[1] A paper read on July 4th, 1910, at the Edinburgh Conference on Tuberculosis.

Health Act has been adapted to phthisis local authorities are much more ready to add phthisis to the list of the compulsorily notifiable diseases. The following figures will indicate the rapid rate of progress now established. In 1906 not a single local authority of the whole 313 had adopted compulsory notification. In 1907 compulsory notification was adopted by 8 local authorities—four towns and four county districts, representing a population of 589,698, or 13·2 per cent. of the population of Scotland. In 1908 the number of adopting local authorities rose to 10—five towns and five county districts, representing a total population of 634,467, or 14·2 per cent. of the population of Scotland. In 1909 the number of adopting local authorities rose to 53—30 towns and 23 county districts, representing a total population of 1,150,344, or 26 per cent. of Scotland. In 1910, up to the end of June, 74 local authorities have adopted the Act—41 towns and 33 county districts, representing a total population of 2,177,886, or approximately 50 per cent. of the whole population of Scotland. The Board's first circular was issued in 1906. The phenomenal spread of notification has thus taken place within four years. In several places the Act has been only temporarily adopted, but it has always been renewed when the period expired.

These are the facts about notification in Scotland. In the days before notification became popular we heard a great deal about the probable hardships to individuals, social ostracism, boycotting, and similar difficulties. The same has always been said at some stage about notification of the ordinary infections. Yet no Act works more smoothly than the Notification Act. Up to now we have rarely heard of anything but friendly services to the sick. The stricken people are too eager to find ways of recovering their health to be worried about any sort of social consequences. The experience everywhere is that when treatment, whether much or little, is provided, the claimants never fail to come forward spontaneously. To use words like ostracise, boycotting, and similar terms of the inexperienced amateur is now a practice long out of date in Scotland. We know better. These are, I am afraid, only the prejudiced phantasies of the unilluminated. They are, however, balanced by the opposite strain of difficulties—namely, the exaggerated fear that the resources of any local authority will be overwhelmed by the claimants for treatment. This, too, is contradicted by experience. As numbers come forward, ways for their reasonable treatment continue to open up. Here a little and there a little, something is being done, and, as time grows older, the administrative pace grows quicker; for, on the one hand, the public authorities are more and more realising their public duty, and, on the other hand, the private patients are animated more and more by well-founded hopes of recovery. These two tendencies are now in full play, and already, thanks to the long and persistent educational efforts of conferences like this, local authorities and patients alike are swept forward by a social momentum that nothing will arrest or divert.

3. *Isolation and treatment.*—Hitherto men have rested the significance of the notification of phthisis on the fact that it is an infectious disease. This is important, but it does not explain the real significance of notification. This significance lies rather in the fact that when a disease is once notified the patients must be dealt with not in the mass, but as individual cases. In the days when we knew only of the existence of masses of disease, crowds of cases of typhus, of typhoid fever, of small-pox, of scarlet fever, naturally preventive measures took the form of improving the general environment—the drains, the water-supply, the sites of houses, and the like. But as soon as individual cases came to be notified each case had to be dealt with on its own special merits, isolated, and treated according to its needs. That is what notification has done for the ordinary infectious diseases. That is what it is now doing for phthisis. We are long past the stage when we stop at general improvement of the environment. We are now well into the stage when we must deal with the individual case and his individual environment. That is why notification is important. It enables the local authority to bring the full force of an improved environment to bear on the specific needs of the individual patient.

To give all the details for each locality would itself require a long paper. It is enough to state that in every administrative locality something definite of an official kind is being done. In two counties a combination of local authorities own and manage a sanatorium for early cases. In other two large counties a central sanatorium is available. In yet others the medical officer of health is authorised to keep a certain number of sanatorium beds filled with selected cases. In several counties wards are set aside in infectious diseases hospitals. In some others vacant small-pox hospitals are available and used for phthisis. In the towns there is also great progress. The position in Edinburgh is too well-known to need more than a reference. In Glasgow four dispensaries under municipal management have been instituted, with an adequate service of medical men and nurses. Glasgow also makes contributions to a large sanatorium. Dundee has a dispensary, and recently has arranged for a considerable number of sanatorium beds. In one case a town and a parish council combine in the management of a sanatorium that has come to them by bequest.

Health visitors have been appointed by three county districts and by 18 burghs, some of the latter having appointed two or three visitors. In other places arrangements have been made with local nursing associations. Four county districts and five towns provide shelters for home treatment of suitable cases.

Where no definite hospital arrangements have been made, a good deal of minor work has been done—disinfection of houses and clothing, appointment of health visitors, diffusion of information, provision of spittoons, &c. Nowhere can it be said that notification has remained fruitless. Almost every fortnight marks the accomplishment of something definite somewhere. And this without coercion. It is the declared wish of the Local Government Board to see every local authority equipped with the triple organisation of dispensary, sanatorium, and hospital, or their functional equivalents. No two localities are quite alike and every positive administrative development is welcomed. It should be added that the generosity of interested and wealthy men has been a very conspicuous feature of the campaign.

What is very impressive is how much can be effectively accomplished at a very small outlay.

4. *Work by Poor-law authorities.*—But we must not forget the splendid work constantly done for years by the Poor-law authorities. I have a special return for 745 parishes out of the existing 874. At the present date there are 878 cases of phthisis under treatment in the poorhouses and 471 cases under outdoor supervision. In the Edinburgh poorhouses 100 cases are under treatment; in the Lanarkshire poorhouses, chiefly Govan and Glasgow, there are 620 cases. Among the causes of pauperism phthisis stands very high. The facts exhibited in Dr. J. C. McVail's recent report to the Poor-law Commission deserve the most careful study. Probably no single disease contributes so much to the roll of the poor. But the treatment of phthisis is a heavy burden to place on the shoulders of the Poor-law authorities. So far as Scotland is concerned, the Local Government Board has taken the view that the treatment of phthisis is the duty, not of the parish council, but of the town or county council. And this view will, no doubt, ultimately be realised. The transfer from Poor-law to public health administration is rapidly taking place now and will continue until all cases of the disease are within the full control of the preventive medical authority.

5. *The declining death-rate.*—What has somewhat amazed, if not amused, me in this whole movement is the curious paradox that in all other infectious diseases—such as typhoid fever, scarlet fever, &c.—it is considered right and necessary for the public health authority to deal with the individual patient, but in pulmonary phthisis many maintain that we should leave the individual patient alone and deal only with the environment. The death-rate, it is alleged, is going down of itself. Improve housing, improve food, improve the environment generally, but leave the private patient to the private medical man. Apparently some men are more or less satisfied with the way the death-rate is going down. I am not. It is going down, certainly, but not fast enough for me. And it is not going down of its own accord or from any mysterious influence of the Time Spirit. It is going down because we are putting it down. It has been going down ever since the serious work of sanitation in Scotland began. It continues to go down because the medical men are getting to understand the disease better, because they are diagnosing it earlier, because they are helping forward the improvement of the surroundings, because they are letting fresh air into the houses, because they are reducing the consumption of alcohol, because they are

beginning to understand dietetics better. It is going down, too, because the medical officers of health are day in and day out pushing forward the operation of every variety of public health machinery, the cleansing of houses, the disinfection of houses and persons and clothing, the steadily increasing isolation of as many varieties of acute infection as are likely to benefit by that measure, and, in a word, every proceeding that places the individual patient in a better environment, permanent or temporary, so increasing the personal resistance and reducing the complications of the acute infections. It is going down, too, because the sanitary inspectors and burgh engineers maintain a ruthless attack on damp houses, defective drains, defective ventilation, dirty rooms, dirty people, dirty clothing, and over-crowding, so reducing at every hand the chances of contracting any infection, tuberculosis among the rest. It is going down, too, because the inspectors of poor and the parish councils are steadily strengthening their grip of this primary cause of pauperism.

But the pace of the down-going of the death-rate is still very slow. So long as we can say that in Scotland alone nearly 6000 people die every year from phthisis, this one form of tuberculosis, the pressure of administrative measures should never slack. And so long as I have an administrative breath to draw they never will slack. The belief that the death-rate is going down of itself, and rapidly enough, looks like the special pleading of the interested or the fatuity of the fatalist. The belief is an erroneous belief.

6. *Conclusion.*—Before I end this short paper I cannot resist the temptation to make a remark on certain "red herrings" that are persistently drawn across the administrative scent. I call them "red herrings" somewhat disrespectfully, because I have repeatedly found that they are offered, not as a reason for doing something positive on the special line suggested, but to prevent anyone from doing anything positive on any line whatever. For instance, it is said that phthisis is a housing question. Of course it is a housing question. So is typhoid fever. But the quickest way to get at the house is to deal with the patient in the house. That is what our Housing Acts and our Public Health Acts and, above all, our Town Planning Acts are there for. For my part, I should like to see every local authority in Scotland rise to the great height of the opportunities it now has to make every house, every hamlet, every village, every small town, every great town in Scotland serve to the full the ends of business, health, and beauty. But the direct attack on phthisis will still have to go on. For phthisis is much more than a housing question. It is an infantile question. To meet that, we have our Notification of Births Act and the Children Act. These contain immense powers, and all the powers are powers of dealing with the individual. The crop of health visitors, voluntary and official, is the answer to the children question. It is also a school child question. The answer to that is the system of medical inspection, now happily established over almost the whole length and breadth of the kingdom. If it should finally appear that the great period of personal infection is, as von Behring maintains, the period of infancy, the shortest way to bring assistance to mother and child is to deal individually with both. If it should be established, as is probable, that practically every child is, in one degree or another, at some time or another, infected with tuberculosis, and if it be true that a limited dose acts in some measure as an immunising agency, it is all the more imperative that by dealing with the individual child and his environment we should, by clearing away all sources of major infection, keep down the dose to the relatively harmless minimum. Phthisis is also a food question. The answer to that is our elaborate Food Acts, our powers of dealing with meat and milk. If milk is the chief factor of infection, the shortest way to the guilty dairy is to start from the infected child. All our Dairy Regulations and Milk Acts have arisen out of the clinical physician's demand for an explanation of this or that infectious disease. But phthisis is also a factory question. The answer to that is the unremitting enforcement of the Factory and Workshop Acts. And so, through every other one of the many relations of administrative control, we must work the administrative machinery we have or devise machinery more suitable. The whole campaign must go forward as one movement. For all these special questions are strung on a single thread—the thread of the individual life. We have talked long enough about the big things. We are now in the full tide of the little duties that make the big things possible. In Scotland we need no more legislation for the moment. We need first to work for all it is worth the legislation we have. In Scotland we have taken our own line and we intend to keep it. We have shown that the powers of our statutes are simple and effective; all we require is the wish and will to work them. The facts I have given you are proof that neither the wish nor the will is wanting. To every man that wants to live we wish to offer the chance to live.

PREVENTIVE MEASURES AND THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.[1]

BY EDWARD W. HOPE, M.D., C.M., D.SC. (PUBLIC HEALTH) EDIN.,

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THE experiences of the city of Liverpool agree with those of other centres of population in showing a remarkable decline in deaths from phthisis and other forms of tuberculosis during the last few decades, the decline, however, being considerably more pronounced amongst females as compared with males than obtains in England (or Scotland) as a whole. The boundaries of the city having been extended, the population in the year 1895 closely approximated to three-quarters of a million inhabitants; the phthisis death-rate during that year was 2·1 per 1000 amongst males and 1·5 amongst females. Between that year and 1909 the rate further diminished, not of course without interruptions, and in 1909 the rate was 1·8 amongst males and 1·1 amongst females.

Within the narrow compass of ten minutes it is not possible to more than briefly outline the preventive measures and the administrative control which are associated with these results and to indicate what appear to be appropriate lines for future advance, always remembering that each city and each centre of population has some special difficulties of its own to contend against.

One of the most obviously necessary undertakings in the city of Liverpool was to undo the evil consequences of the want of foresight and design during the rapid growth of the city, by the removal of the almost overwhelming burden of dwellings which were unfit for human habitation by reason of their vicious construction, narrowness, closeness, and bad arrangement of the courts and streets in which they were situated, and from want of light, air, ventilation, and proper conveniences, which rendered them dangerous and injurious to the health of the occupiers. No halo of romance, such as surrounds your Edinburgh insanitary property, redeemed them; their records were the records of poverty and filth, of disease and death, and they were consigned to unpitied destruction.

Close upon one million sterling has been spent during the last 25 years by the sanitary authority in demolishing some 8000 such dwellings and in erecting some 2500 tenement houses. Commercial necessities, such as extensions of railways, warehouses, &c., have led to the demolition of probably an equal number of insanitary dwellings during the same period. Models of these houses are exhibited in the museum.

Generally speaking, the former inhabitants were housed by private enterprise, but for the very poorest the corporation themselves have had to provide, and to meet the needs of this latter class some 2500 tenement houses, housing some 10,000 people, have been erected. These houses are not let to any tenant, but are reserved exclusively for the poor dispossessed, and are occupied almost entirely by the same people who had previously been housed under most insanitary conditions.

The procedure has furnished a most interesting chain of evidence in regard to tuberculosis. The owners of insanitary property, it need hardly be said, did not willingly allow their property to be demolished, and resisted in every way the action of the corporation; consequently evidence was adduced which satisfied the Grand Jury and the Recorder that tuberculosis, notably phthisis, was prevalent to an extreme degree

[1] A paper read on July 4th, 1910, at the Edinburgh Conference on Tuberculosis.

amongst the occupiers of those houses. The re-housing in sanitary dwellings gave a check almost at once to that disease, and the phthisis mortality rate, which had reached nearly 4·0 per 1000 amongst those people in their old surroundings, has during the last two years fallen to 1·9 in their new surroundings. These great housing operations, therefore, which have cost the city a million of money, and bid fair to cost half as much again, have played some part in the decline of tuberculosis.

Education is an extremely important aid in diminishing tuberculosis. It is part of the duty of the large sanitary staff employed, more especially the female staff, to explain the advantages of personal and domestic cleanliness, free ventilation, and so forth, and to show that these and temperance are the agencies which strengthen the resistance of the threatened consumptive and prevent infection; that preventive measures, in other words, are curative measures, and curative measures are preventive measures. Suitable cards of instruction are widely distributed to emphasise this.

The cleanliness which is urged within the homes is followed as far as possible outside the homes, the frequent washing of the streets by means of hose-pipes being one of the uses freely made of the practically unlimited water-supply which Liverpool enjoys.

Facilities must be afforded for the diagnosis of the disease in order that every ameliorative measure which each particular case admits of may be put into operation as quickly as possible. The special and general hospitals, the general dispensaries, and Poor-law and private medical practitioners are generally available for this purpose; while the medical inspection of school children, being largely in the hands of the medical officer of health and in the closest association with the Public Health Department, has helped forward this work so far as school children are concerned. Some of the honorary staff of the Liverpool Consumption Hospital are willing to see actual or suspected cases of phthisis found by the medical inspectors in order that the diagnosis may be promptly confirmed, although a practical application of what are believed to be the best methods of dealing with the children has not yet been fully reached. The facilities afforded by the various medical charities, dispensaries, and so forth, within the city are very considerable, and tend to become more closely coördinated. Happily, the actual numbers of cases of phthisis or suspected phthisis discovered at school inspections are relatively few, but it is interesting to observe that the disease has been found more frequently amongst the new admissions to the schools than amongst those leaving the schools. This may possibly be due to the worst cases being cut off the rolls during the intermediate ages, either being ill at their homes or in the hospital, or some may have recovered and some have died between the two periods of inspection. In this connexion, and in the interests of health generally, it is regrettable that the teaching of hygiene and temperance in schools does not receive greater prominence than is at present given to it. Bacteriological investigations of sputum are conducted by the corporation bacteriologist.

So far as the provision of hospital treatment is concerned, by far the larger number of beds, approximately 600, are provided by the Poor-law guardians, and payment is taken from a very considerable proportion of those who use this accommodation; they are mostly occupied by advanced cases. Generally the situation and administration of the Poor-law institutions are quite good. The wards of some 50 beds provided by the sanitary authority for early cases are always full, but difficulty is experienced in inducing patients in the early stages to go to the sanatorium at Heswall. The difficulty is that a phthisical breadwinner, although he is aware of his condition, yet struggles manfully to follow his calling, solely because the support of his family depends upon it. The establishment of any fund, by insurance or otherwise, for the assistance of families whilst the sufferer is in hospital is greatly to be desired.

The question has been mooted as to what advantages are likely to accrue from the transfer of the treatment of phthisis patients from the Poor-law guardians to the sanitary authority. However desirable this may be from various considerations, it is quite a matter for consideration whether any actual benefit will accrue to the patient himself. The great majority of cases going to the Poor-law institutions are advanced cases, some of them very advanced, and incidents from time to time occur which raise the important question as to whether powers should be sought to detain compulsorily every consumptive whose condition, habits, or home surroundings are likely to be dangerous to others. It is obvious that where, in the words of the Public Health Act, "the patient is without proper lodging and accommodation" he should be detained, not only in his own interests, but in those of the public, for exactly the same reasons that a scarlet fever patient is detained. There is, of course, the great distinction that his detention may be protracted, and that he may never recover; on the other hand, he is not cut off from his relatives, who may visit him as freely as may be thought desirable, and in any case he is better in the hospital where he is getting proper attention than outside where he gets none. Compulsory detention for prolonged periods is advantageous in other mental and physical infirmities in which ultimate recovery is doubtful, and would in many cases be advantageous in phthisis.

The proper body to be entrusted with such powers must obviously be that which undertakes the treatment of the cases. The guardians of the poor at present accept this duty, and the power to detain should clearly be given to them, unless the entire obligations are transferred to the sanitary authorities. But compulsory detention of a case in the hospital must imply compulsory removal to the hospital of a patient found to be without proper lodging and accommodation. Compulsory removal of such a patient may, at first thought, appear to be harsh, but in my own recollection the same arguments were urged against the removal of typhus fever patients, and five-and-twenty years ago it was a common thing to obtain magistrates' orders for the removal to hospital even of such cases as these, whilst ordinary zymotic diseases were relatively seldom interfered with. To-day, if the patient is not promptly removed to hospital, the angry relatives want to know the reason why. There is no doubt that the same sentiment would in due course arise in regard to the compulsory removal and detention of the dangerous consumptive. In any case the interests of the patient would be safeguarded by the necessity of the authority obtaining the magisterial sanction. The duty of initiating compulsory removal could hardly, however, be imposed upon the guardians. Most sanitary authorities, at all events the large centres, have some appropriate hospital accommodation available, and there would be no difficulty in this respect.

In regard to infection by foodstuffs, it was in or about the year 1890 that the sanitary resurrection of the milk-supply commenced. A crusade was then started which, by the aid of special legislation, has resulted in reducing the amount of tubercle-infected milk to a vanishing point, so far as the city milk is concerned. Liverpool consumes about 34,000 gallons of milk daily, and of this amount approximately some 17,000 gallons, or about one-half of the total supply, comes from the country. In the year 1904, 9·3 per cent. of country milk was found to be tubercle-infected and 1·5 per cent. of town milk was found to be tubercle-infected. Last year the proportions were 1·8 per cent. of country milk, whilst the town milk was distinguished by a total absence of tubercle, and it is a fact that throughout all the years since attention was paid to the subject the town milk has been more free from tubercle than the country milk, for reasons which I have no time here to explain. But it is well known that no domesticated animal is more closely or more continuously confined than the milch cow, nor do the conditions of confinement of any other animal approximate so closely to those of the insanitary human dwellings in which tuberculosis is so rife. Cow-houses, shippons, or byres are found, more especially in country districts, in which dirt, darkness, and vitiated atmosphere are constant. Under conditions such as these tuberculous disease necessarily results.

Finally, temptations to one great predisposing cause of tuberculosis—namely, intemperance—have been largely diminished, and as this diminution continues the burden of the struggle against tuberculosis will be diminished likewise.

The saving of life from tuberculosis, like the saving of life from everything else, is a national gain, and everything now points to the recognition of the fact that the war against tuberculosis is one in which the educated community will play an important part.

Liverpool.

PREVENTIVE MEASURES AND THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.[1]

BY H. SCURFIELD, M.D., C.M. EDIN., D.P.H. CAMB.,
MEDICAL OFFICER OF HEALTH OF THE CITY OF SHEFFIELD.

As regards preventive measures, I suppose we shall all agree that if the whole population were well fed, well housed, and able to lead healthy lives, in other words, if destitution of adults and children were abolished, we should have little difficulty in dealing with the rapidly decreasing amount of infectious material and stamping out tuberculosis. I suppose it may be said from the experience of post-mortem examinations that the danger is not so much of contracting infection but of contracting infections of such degree that our systems cannot successfully deal with them. If the extra healthy life of a sanatorium can deal successfully with an infection that has made considerable progress it follows that an ordinarily healthy life ought to be capable of dealing with infections of minor degree.

I suppose most of us agree that infection usually comes from a human source. With regard to milk, I will only say that, although most children apparently consume bovine tubercle bacilli without ill-effects, in the interests of those who do not, as well as in the interests of agriculture, I hope a well-considered scheme for the extirpation of bovine tuberculosis on the lines adopted in Denmark will shortly be instituted in this country.

I will now pass on to measures for dealing with recognisable human infections.

The great thing is to have a comprehensive scheme, and for this purpose we want: compulsory notification, and as an aid to it free examination of the sputum for tubercle bacilli; home visiting of notified cases by visitors on the look out for other cases among the "contacts"; visiting of work-places where necessary, and as a result of these visits, disinfection and removal of defects; and suitable hospital accommodation for the various stages of the disease.

I cannot do better than describe the Sheffield system in order to show to what extent we approach completeness.

Examination of sputum.—An arrangement has been made with the Bacteriological Department of the Sheffield University by which any practitioner can have specimens of sputum examined free of charge.

Home visiting.—When a case of tuberculosis of the lungs is notified a special inspector visits and obtains the history of the case. He leaves printed "advice," gives an order for a pocket spittoon, disinfects if necessary, sees that nuisances or defects in the house are dealt with, inquires as to occupation and place of work, &c. As a result it may be necessary to disinfect or deal with defects at the workshop or report to H.M. inspector of factories. The printed reports of the inspector, giving the family history, are filed at the health office.

Much of the subsequent visiting is done by the Queen Victoria District Nurses in return for a subscription from the Sheffield corporation. There are 15 district nurses, and each sends in a weekly report of her visits and matters requiring attention. The matters which she is specially asked to note are: rooms requiring disinfection; cases wishing removal to corporation hospital; cases removed, or which ought to be removed, to union hospitals; changes of address; cases in overcrowded or dirty houses; failure to comply with instructions; and other occupants of houses showing symptoms.

Examination of "contacts."—As regards delicate "contacts," if they are of school age the nurse is asked to send them to the school medical officer for examination; if not of school age, to advise them to consult their medical adviser, or go to the hospital out-patient department. I am in hopes that something may be done in the way of special consulting hours at the hospitals for chest cases and suspected "contacts." If a more complete examination of "contacts" is found advisable it will be necessary to appoint one or more medical men for this purpose. In Sheffield it means the examination of the members of about 700 families annually.

[1] A paper read on July 4th, 1910, at the Conference on Prevention of Tuberculosis at Edinburgh.

If it is advisable to have a medical examination of all the "contacts," how often should it be repeated? It is obvious that in a slowly developing disease like consumption a "contact" who shows no signs in January may show signs in April, even although the source of infection has been removed to a sanatorium. I should like to have some information with regard to the Edinburgh system as to how many complete families are examined every year, and as to how often the same family is re-examined, and as to what percentage of the estimated number of infected households it is found possible to deal with in this manner.

For my own part, I think it is sufficient for the nurse to keep the family "on the alert" for members who look delicate, or who have coughs, &c., and especially to "rub in" the necessity for all the "contacts" or other members of the family leading healthy lives. Even under present conditions we may conclude that most "contacts," if they become infected, succeed in grappling successfully with the infection, because the number of deaths annually remains stationary, or shows a slight decrease, while the population increases. In other words, each victim to consumption bequeaths on the average a fatal legacy to one person only.

Important as examination of the "contacts" may be, it must be more important to deal with the actual "infecting" cases at the home, firstly, by educating them "how not to infect," and for this purpose a short period of training at a hospital is far more efficacious than any amount of advice and domestic visiting; and, secondly, by removing them to hospitals for advanced cases when they have reached that stage of the disease which renders them dangerous occupants of a home with limited accommodation, no matter how careful they may be. Dr. A. Newsholme has produced evidence tending to show that the isolation in workhouse hospitals of advanced cases has been the most powerful factor in the decline of the consumption death-rate in recent years. I append a table giving the Sheffield statistics with regard to this matter.

Table giving Statistics in regard to Tuberculosis of the Lung and "Phthisis" in the City of Sheffield.

Year.	Tuberculosis of the lung and "phthisis."				Deaths of notified "consumptives" classified under other causes.
	Deaths.			Death-rate per 100,000 per annum in Sheffield.	
	City.	Workhouse hospitals.	Percentage in workhouse hospitals.		
1889	552	62	11·2	168	—
1890	618	75	12·1	192	—
1891	551	81	14·7	169	—
1892	459	59	12·9	139	—
1893	552	74	13·4	165	—
1894	502	72	14·3	147	—
1895	473	76	16·1	136	—
1896	453	56	12·4	128	—
1897	522	90	17·2	146	—
1898	447	98	21·9	123	—
1899	502	117	23·4	136	—
1900	539	135	25·0	143	—
1901	580	142	24·5	141	—
1902	491	121	24·6	117	—
1903	573	142	24·8	134	—
1904	536	154	28·7	124	12
1905	490	135	27·6	111	17
1906	452	126	27·9	101	21
1907	524	146	27·9	115	24
1908	564	214	37·9	121	17
1909	523	174	33·3	111	13

Delicate "contacts" may be suitable for the open-air school or for convalescent homes. I hope part of the grant allocated by the Sheffield council to sending consumptives to sanatoria will shortly be utilised for sending delicate "contacts" to convalescent homes. Undoubted consumptives found among the "contacts" are, of course, treated as ordinary notified cases.

Hospitals for short periods of educational treatment.—Hospitals are provided by the corporation of Sheffield for short periods of treatment for consumptives at any stage of the disease except the last. By the short period of treatment it is hoped to educate the patient how to live without infecting others; to give the relatives a rest and a chance of increasing their resistance to the disease and to enable the home to be disinfected; and to select by the best possible method curable cases to be sent on for prolonged treatment at a sanatorium. I would here lay special emphasis on the valuable educational effect of "visiting day."

Sanatorium treatment.—Sheffield has no sanatorium of its own, and £1000 are put in the estimates for sending patients to other sanatoriums. At present there being no invalidity insurance scheme we could not fill a 40-bed sanatorium with suitable cases from Sheffield. It might be more satisfactory to have a sanatorium of our own, one advantage in having the sanatorium directly connected with the complete scheme being that the preventive side may not be lost sight of. Thus, in many sanatoriums when the patient leaves he has not been educated, and he knows no more than when admitted how to deal with his sputum.

Hospitals for advanced cases.—If, after the short period of treatment, the patient is obviously going downhill, and at an advanced stage of the disease, and he cannot have a bedroom to himself at home, and has no means, every effort is made to get him persuaded to go straight into one of the union hospitals, where there are separate wards for consumptives. The union hospitals, therefore, provide for the most dangerous of the advanced cases. Compulsory power of removal would be useful in a few cases, but it is not likely to be granted for removal to a hospital administered under the Poor-law.

After-care.—The cases which return from hospitals or sanatoriums to their homes continue to be visited by the nurses. If cured, their names are removed from the list. There is, of course, the difficulty of finding work. The Guild of Help does what it can. An after-care committee cannot meet this difficulty until the great question of the better organisation of the labour market as a whole has been completed.

No need for additional medical institution in the form of a voluntary tuberculosis dispensary in Sheffield.—As things have developed in Sheffield a dispensary would be no advantage. The sub-department of the medical officer of health becomes in fact the dispensary and the bureau of information with regard to consumptives, and can do everything that a dispensary can do. The addition of a dispensary would only cause overlapping and duplication of work by the necessity for cross-reporting and a double system of registers and records. At present all the information is in one office. The out-patient departments at both hospitals coöperate in the scheme.

We do not wish it to be thought that consumption is a thing to be shelved on to a special dispensary, and with which other medical institutions have no concern. All hospital wards and out-patient departments, both medical and surgical, will have to treat consumptives from time to time for complications; district nurses will be asked to visit them; and the guardians will have to provide for them and also for their relatives if the bread-winner is in hospital. All these bodies must feel that the prevention of consumption is their business and become allies in the campaign.

I can well imagine that special out-patient hours for consumptives, or suspected consumptives, may be thought, in some towns, preferable to establishing a new medical charitable institution. Such out-patient consultations could be restricted to the use of delicate "contacts," or of patients unable to pay for a consultation in the case of whom the medical attendant desires a second opinion. The great thing is that the scheme should be comprehensive. It is too much to expect that each town will work out its salvation in exactly the same way.

One of the weak spots in the scheme is that the bread-winner of the family usually remains at work until the disease is past the curable stage. Although the guardians coöperate by allowing outdoor relief while the bread-winner is at a sanatorium, this defect in the scheme can only be met adequately by invalidity insurance.

Other measures.—In addition to the general measures to increase the resistance of the individual by the prevention of destitution and by rendering a healthy life possible, and special measures for dealing with consumptives, there are two other matters which require attention.

By-law against spitting.—In the first place the campaign against spitting on the floor should be pushed vigorously. It is probably easier to stop everybody spitting than to stop consumptives spitting, and however perfect the system many cases will develop an infectious expectoration before being notified. We have in force in Sheffield the usual by-law, which runs as follows:—

> No person shall spit on the floor, sides, or wall of any public carriage, or of any public hall, public waiting-room, or place of public entertainment, whether admission thereto be obtained upon payment or not, or of any enclosed and covered market.

The prohibition ought to be extended to the insides of all buildings used in common, such as workshops, sale-shops, public-houses, &c., and also footpaths. It is surely not too much to ask people to spit in the roadway or gutter. If spitting generally is dealt with the consumptive becomes less of a marked man, and it would be a good plan if chronic bronchitics used pocket spittoons.

Occupational causes of consumption.—The second point is that more attention should be given to the effect of occupations in making people liable to die from consumption. Men are nearly always more liable than women. Is this due to the greater abuse of alcohol and to spitting in workshops? In seaports the male death-rate is not much higher than the female owing to the more healthy occupations. In inland factory towns the male death-rate is frequently double the female. In places like Dundee, where many women are employed in factories, the female death-rate from consumption is equal to the male. I do not think sufficient attention has yet been given in factories and workshops to the effect of occupations on health as distinguished from the prevention of accidents.

Sheffield.

PULMONARY TUBERCULOSIS AS A PROBLEM OF ADMINISTRATION: THE ECONOMICS OF PHTHISIS.[1]

BY A. K. CHALMERS, M.D. GLASG.,
MEDICAL OFFICER OF HEALTH OF GLASGOW.

THE following remarks have reference only to tubercular phthisis and to some problems of administration which arise in connexion with it. They are such as must frequently occur to everyone who deals with the disease, whether clinically or administratively, and the only claim which they can have on your attention is that they may be regarded as field notes, taken, as it were, in the middle of the struggle. To this extent they may serve to represent some of the practical difficulties which await solution.

My illustrations are drawn from the city of Glasgow, which may be taken as a type of the industrial and commercial populations of this country. It differs from other Scotch cities mainly by reason of its size. It differs from cities of corresponding size in England in the character of its housing. To this one feature alone we in Scotland may, I think, look for some part of the reason why phthisis is more prevalent with us than in England, for our Scotch tenement system, running as it does to four or more storeys in height, with, it may be, 12 or more houses[2] entering from a common and usually enclosed stair, is the despair of everyone who believes that fresh air may and ought to be brought to everyone's door.

In the autumn of last year the corporation of Glasgow resolved to include consumption among the notifiable diseases. A system of voluntary unpaid notification had been in operation for several years prior to this, but the results failed to give any reasonable picture of the distribution of the disease in its currency. Knowledge of a *post-factum* character was, of course, available from the death-rates, and this had thrown some light on the economic incidence of the disease. It showed, for example, that when families were graded according to the number of apartments

[1] A paper read on July 4th, 1910, at the Edinburgh Conference on Tuberculosis.

[2] In Scotland the use of the terms "house" and "tenement" is reversed, the "tenement" being the building in which there may be several "houses."

they occupied, their risk of dying from phthisis fell as the size of the house increased:—

1 apartment	Death-rate	2·5 per 1000.
2 apartments	,,	1·8 ,,
3 ,,	,,	1·2 ,,
4 ,, and upwards	,,	0·7 ,,

The death-rate for the city is 1·8 per 1000.

Again, and still bearing on the economic aspect of the disease, we could apply to the information which death returns gave, and the test of the wage-earning power as indicated by occupation; and the impression created by adopting the house as the index of the economic position of the phthisical patient was further strengthened, the unclassed labourer having by far the highest death-rate from the disease.

Phthisis Death-rates per 1000 in Two Groups of Occupation at Certain Ages.

Age	—25	35—	45—	—65
Labourers	6·5	7·1	8·6	5·5
Professional classes	2·1	1·9	0·7	0·5

So far, however, we were dealing with results only. Consumption was shown to be relatively more prevalent where house room was most restricted, where wages were always low and possibly irregular, and where, we may assume, food also was on a correspondingly restricted scale. But considering the long continuance of the disease and the reduced earning power which it entails, the review of deaths alone left unanswered the question whether the family originally belonged to the economic grading in which it was found when death occurred. For this we required information of the disease in its development, and notification partly supplies this. Some of the indications which it affords I purpose placing before you.

But before doing so a word may be said regarding a purely machinery difficulty which occurs when phthisis is placed under the ordinary Notification Act. This Act, as you know, was designed to deal with short-lived infectious disease, and in applying it to one with the duration of phthisis the question of duplicate notification was to be expected; indeed, it was for this reason mainly that I recommended the adoption of the Act for a limited period only. So far, of course, we have only had six months' experience, but it shows that duplicate notifications are most largely received from dispensary or hospital practice and mainly from the Poor-law service.

Classification of 6 Months' Notifications.

	Private.	Public.	Total.
Notifications	945	1848	2793
Cases	865	1406	2271
Duplicates	80	442	522
Percentage of cases notified more than once	9	31	23

Here, again, we have further evidence of the economic position of the phthisis patient, for almost 62 per cent. of the cases notified are of those who seek medical advice at Poor-law or charitable dispensaries. It is, of course, possible that the terms of the Act are more rigidly observed in these than among patients obtaining private medical advice, but the number of omissions among these latter would, I believe, fall short of equalising the difference in the numbers here given.

It will be noted, however, that while only 9 per cent. of the private cases are notified more than once, this occurs in 31 per cent. of the public cases, and it is a question whether our Local Government Board might not with advantage adopt the terms of the circular of the English Board which requires Poor-law authorities to acquaint sanitary authorities of all cases of phthisis occurring in persons in receipt of Poor-law relief. It is probable, however, that an amendment of the Infectious Diseases (Notification) Act would be required to effect this.

Effect of excluding phthisis from general hospitals.—We may here notice a further illustration of the economic pressure produced by phthisis in the increasing proportion of cases seeking relief in Poor-law hospitals. In a sense, the policy of the general hospitals was bound, sooner or later, to raise the question of providing suitable hospital accommodation for the disease. Even before the days of open-air treatment the practice of excluding phthisis from the wards of general hospitals was determining a stream of cases towards the hospitals of the Poor-law. The following figures illustrate this. They are taken from the returns of the Glasgow hospitals. I quote only the figures for the oldest of these (the Glasgow Royal Infirmary), but the practice of the others corresponds:—

Table Illustrating Exclusion of Phthisis from General Hospitals.

Period.	Medical admissions.	Of which phthisis.	Per cent.*
1880-04	12,339	1,843	15·0
1890-04	9,683	1,115	11·5
1900-04	11,764	396	3·4
1907	2,556	74	2·9

* Percentage of phthisis to total medical admissions.

Coincident with this reduction from 15 to barely 3 per cent. of phthisis among the medical admissions there has occurred an increase in the proportion which the phthisis deaths occurring in Poor-law hospitals bear to the total deaths from the disease. Again, I take local figures to show the change in 15 years.

Deaths from Phthisis in Charitable and Poor-law Institutions.

	Year.	Number.	Per cent.*
Charitable institutions	1892	53	3·6
	1907	30	2·4
Poor-law ,,	1892	142	9·7
	1907	335	26·6

* Percentage of total deaths from phthisis.

During this period the proportion of the phthisis deaths occurring in Poor-law hospitals has risen from 10 to almost 27 per cent.

The disintegrating effect of phthisis on family life.—When current cases come under the notice of the public health authority through notification, the economic position of the family has been so far impaired that in the proportion of almost two to one medical advice has been sought from Poor-law or charitable agencies. It brings us therefore face to face with the social conditions under which the administrative problems arise, and in considering the form in which to present some of these conditions I desire to acknowledge my indebtedness to my assistant, Dr. Alexander S. M. Macgregor, for some most interesting notes of the cases coming under his observation.

I select three phases for notice: (1) the effect on the home conditions when phthisis affects the bread-winner; (2) the bed-ridden patient; and (3) the children.

To illustrate the first of these I quote one case as illustrating a group: A., a male adult, with wife and six children. On the disease being recognised he is able to become an inmate of a part-paying sanatorium, where he remains for three months. Then he returns home, works a little, but after eight weeks seeks Poor-law help, and for three months is treated in a Poor-law sanatorium. After this he is again for three months at home, but at the end of that time again applies to the Poor-law. At each period of treatment he improves a little, comes out, tries to get work, gets worse, and returns. During each of these intervals of trying to work the family is deprived of adequate support.

In another type of case the disintegration of the family is even more pronounced. This occurs when the husband contracts the disease and the wife becomes the wage-earner. The children suffer: they are underfed and poorly clad. The pawnshop enters at this stage, and its doubtful advantages are freely made use of. The house is changed for a smaller one. The wife may take in sewing or hawk clothes; both may be undesirable in the circumstances, but there may be no choice. If hospital treatment is accepted the man's anxiety for his family brings him out too soon, and he hesitates to go back. He may be unable to adapt himself to or to find work better suited to his condition.

2. *The bed-ridden patient.*—When the mother is the patient and the coöperation of relatives is unobtainable, the position of the children becomes precarious. Neglect which is not the result of indifference may be difficult to prevent. If the dwelling is small, the cough urgent, and tubercular diarrhœa present, there may be risk of infection. In my own district I desire to express my warmest appreciation of the readiness with which the Poor-law authorities render assistance in such cases. Another problem of the bed-ridden is the provision of nursing appliances—air cushions and bed-pans are sometimes essential to the comfort of the patient, while the provision of a separate bed reduces at least the risk to the family.

3. *The children.*—The greatest difficulty which our nurses experience arises where the parents' employment is irregular.

The children are poorly fed, and a neglected cold or untended attack of measles impairs the resistance of the mucous membrane of the respiratory tract. The history of many of our cases of phthisis in children begins in one or other of these conditions followed by weeks of failing health, loss of flesh, and night sweats, without any very definite signs in the chest.

Such, then, are some of the conditions which notification discloses and for which in time it must ask a remedy. Also they seem to me to push outwards the administrative horizon of the disease. For if my figures which represent the proportion of public to total notifications as almost 2 out of 3 are fairly maintained over a wider area of observation than the experience of one city can supply, then it brings the family of the consumptive within the zone of administrative requirement. For in the low standard of food and clothing and housing which it implies we have agencies at work which are preparing the soil best suited for fostering the disease we wish to eradicate.

Conclusion.

Thus, the administrative control of phthisis becomes a many-sided problem, and just because of its complexity and magnitude there is some risk of temporising with it.

In the allocation of function as between the several authorities whose sphere of action touches one or other aspect of the question, there is danger that each may be tempted to await developments on the part of the other. In this respect we suffer from limited views of administrative responsibility. In a general sense it is the function of a public health authority to prevent disease, while the Poor-law authority aims at preserving the economic independence of the individual. But the surest way of accomplishing the latter is to maintain individual health, while the prevention of disease is best accomplished when the economic status is maintained. The administrative problem requires the accomplishment of both.

A scheme has already been outlined in a book which for its comprehensiveness, as well as for its masterly arrangement of detail, has, I think, helped forward the solution of the problem more than any other work on the subject. I refer to the recent volume of Dr. Arthur Latham and Mr. Garland. Recognising the question as a national one, it proposes to enlist the active interest of the nation by a scheme of national insurance against the disease. In no other way does it seem to me shall we ever be able to continue the struggle with so reasonable a prospect of ultimate success. It is the principle of the friendly society applied to the nation as a whole. And among the advantages which would follow its adoption we should see, I think, a renewed and more vigorous effort on the part of local authorities to deal comprehensively with housing reform, which is so essential to success in the campaign against tuberculosis.

Glasgow.

A RECRUITING OFFICER'S NOTES ON THE PREVALENCE OF CERTAIN DISEASES IN EGYPT.

BY G. W. G. HUGHES, M.R.C.S. ENG., L.R.C.P. LOND.,
CAPTAIN R.A.M.C. (ATTACHED EGYPTIAN ARMY).

THE following notes are made from observations on Egyptian conscripts.

According to the Recruiting Law of 1902 every Ottoman subject resident in Egypt between the ages of 19 and 27 years is liable for military service. There are many causes for exemption from this service which need not be detailed here excepting that the payment of £20 frees the payer from all liability. Consequently the conscripts are almost entirely drawn from the poorer classes. Conscripts are balloted at 19 years and called to the army when 21 years of age. Between 2500 and 3000 men are required annually for the army, but as the standard of fitness is a fairly high one large numbers of men have to be called up and examined.

The recruits have to be at least 167 centimetres (5 feet 6½ inches) in height, well developed, and sound in sight, heart, &c. The men called for the service pass through the hands of two English army medical officers (of whom I am one), who pick out the men who are up to the required standard. These officers move from one district to another, dividing the country between them, and seeing from 300 to 400 men in a day. The men are called up in turn and are first measured for height. If a man is under height he is pronounced at once unfit and not further examined. (For the purposes of this article I have, however, looked carefully at each man and made notes of any obvious abnormality.) Those who reach the necessary height have also their chests measured and go through a rapid examination. The eyes are examined by oblique illumination for opacities and nebulæ of the cornea, the lids are everted; the ears, the head, the teeth, and the movements of the various joints are tested and the heart is auscultated. The examination is necessarily little more than a rapid survey of each man, but with experience it becomes fairly reliable. The recruits, it may be said, are again examined by another English army medical officer in Cairo before final enlistment. The percentage of men found "fit" for the army is about 14.

The following remarks are made from rough notes made on some of the men who have passed before me within the last few months.

Eye diseases.—I examined carefully 2600 men, and of these I found 65 per cent. had some obvious gross lesion of the eye. (No ophthalmoscopic examination was made, and no test of vision was carried out by test types, &c.) Mr. A. F. MacCallan found amongst the pupils of a Government school that 96·4 per cent. showed signs of active or passive trachoma.[1] These pupils would be of a distinctly better class than the conscripts.

TABLE I.—*2607 Men aged about 21 years called for Medical Examination as to Fitness for Army.*

External diseases of eyes.	Granular ophthalmia.		Totally blind.		Favus of scalp.	Anæmia.		Spongy or bleeding gums.
	Cornea affected.	Cornea clear.	One eye.	Both eyes.		Severe.	Slight.	
1693 (64·9%)	961	389	165	33	339 (13%)	74	132	400 (15·7%)
	1350 (79% of eyes)					206 (7·9%)		

TABLE II.—*2227 Men and Boys aged between 14 and 20 years (Average Age about 18 years) all under 155 centimetres (5 feet 1 inch) in Height.*

External diseases of eyes.	Granular ophthalmia.		Totally blind.		Favus of scalp.	Anæmia.		Spongy or bleeding gums.
	Cornea affected.	Cornea clear.	One eye.	Both eyes.		Severe.	Slight.	
1524 (68·4%)	914	398	Not taken.		482 (21·6%)	195	270	284 (12·7%)
	1312 (86% of eyes)					465 (20·7%)		

Notes on Tables I. and II.—The most marked difference in the above two tables is in the percentage of "anæmia." This is to a great extent accountable for by the stunting of growth in ankylostomiasis alluded to in the text. The increase in the percentage of favus also in Table II. may very well be due to the increase in the proportion of anæmia—i.e., diminished resistance of the tissues. Out of 5000 men of a separate series similar to those of Table I. I found 14·2 per cent. had favus.

Every condition of ophthalmia can be seen in Egypt—ordinary acute and chronic conjunctivitis, varieties of granular ophthalmia, spring catarrh, and, what is almost the rule, combinations of two or more of these diseases. I imagine when percentages are given of the amount of "trachoma" in Egypt the term includes all the above conditions. Indeed, one seldom sees a case in which one can exclude "trachoma" as a specific disease with certainty. Personally, in the statistics given I have grouped them under the more ambiguous and comprehensive term of "ophthalmia." Cicatrisation of the granules may leave either a lineal scar tending to produce trichiasis or irregular lines, or occasionally a fine reticulation difficult to detect.

[1] THE LANCET, August 14th, 1909, p. 457.

The difference in the terminations of the granular ophthalmia appears to vary according to the depth of subconjunctival tissue involved. I was surprised to notice the number of cases of granular ophthalmia in which the cornea was unaffected. (Roughly one-quarter of the total cases, see Table I.) One frequently saw huge masses of granulations, or very severe cicatrisation without any lesion of the cornea. Trichiasis was a sequel to the disease in 1·5 per cent. of the cases. Night blindness is frequently complained of.

Conscription being still most unpopular in Egypt, intentional blinding is still occasionally met with, but with nothing like the frequency in previous generations of conscripts. The means employed are either the placing of a hot needle on the cornea, producing a dense white leucoma or a puncture often involving the lens; or by the introduction of lime or an irritant vegetable juice in the eyes.

Favus.—Favus of the scalp is met with in about 14 per cent. of the men. It is allowed by the natives to run its course, usually resulting in bald patches of varying sizes, often involving the whole head. It is essentially a disease of childhood and adolescence. It is more prevalent in the country villages than the large towns and therefore is practically confined to the fellahin (peasantry). It is common to see most of the men of one village affected and of another free.

Anæmia.—Ankylostomiasis and ophthalmia are the most common diseases of Egypt. Indeed, if the Government energy expended on the inquiry into pellagra were devoted to the prophylaxis of ankylostomiasis the country would be considerably more benefited. It has been stated that 70 per cent. of the population are affected. It would seem to be, like favus, a disease of the country villages rather than the large towns. A diagnosis of this affection, during the examination of recruits is, of course, impossible, and, indeed, no idea can be given of the real extent of its prevalence.

The typical picture of ankylostomiasis is as follows. More or less severe anæmia, more noticeable from the colour of the skin than that of the mucous membrane; often a fat, chubby, but pasty face; as a rule, enlarged parotids; the sclerotics are of a porcelain whiteness. The man often complains of pain in the epigastrium and in the back. There are very commonly marks of cauterisation (the native's panacea for most ills) or of setons over the epigastrium, below the occiput, and over the spine and sacrum. One very noticeable fact is that severe anæmia in childhood retards the growth. Thus it is very common indeed to see what seems a small child, with childish genitals and general appearance, about 4 feet in height, but with intense anæmia, whose age is undoubtedly at least 20 years.

But there are many cases where one can be morally certain of the presence of ankylostomiasis without there being any obvious anæmia. The percentage of men with obvious anæmia, more or less intense, is nearly 8 (out of 2600, see Table I.). It is frequently found that recruits have been enlisted, apparently not anæmic, who after a short period of service in the Sudan have developed very severe anæmia and have had to be discharged, the altered conditions of life and climate having rendered acute the latent disease.

Bilharziosis.—As in ankylostomiasis, the presence of this disease can as a rule, only be suspected at the time of examination of conscripts (a suspicion, however, is sufficient for rejection). Such cases complain of pain in the hypogastrium, say that they are "ill in their water," and that they have occasionally blood in their urine. Fistulæ in the perineum or bilharziosis of the rectum are occasionally complained of. Cautery marks above the pubis and over the coccyx give rise to suspicion of this condition.

Cirrhotic livers are fairly common amongst children. The liver is not, as a rule, enlarged, but has a hard, obvious edge. Occasionally there is a considerable enlargement of the spleen. Although usually associated with anæmia, this is not always present. Later stages show dropsy, ascites, and emaciation.

Teeth.—Caries of the teeth is, as would be expected, not a common cause for rejection. I examined 1300 men and found 1046 (83·0 per cent.) had perfect sets of teeth. 198 men of the 254 with imperfect sets of teeth had only one or two teeth missing or decayed. Pyorrhœa alveolaris is fairly common, leading to hypertrophy of the gum, but not usually to much loss of teeth. A very common condition indeed is spongy and bleeding gums, possibly due to some general disease as scurvy. (The Egyptian fellah lives almost entirely on vegetable food.) It is essentially a disease of the poorer classes. It produces loosening and loss of the teeth, especially the incisors. I have noticed that it is often associated with knock-knee in children.

Pellagra.—This disease has been the subject of a good deal of inquiry lately in Egypt. The question of attributing it to diseased maize has been much discussed. It is more common in the Delta than in Upper Egypt and is noticed more in the winter and spring months. The skin lesion is obvious and unmistakeable, but other symptoms of a nervous disease, excepting perhaps a slight increase of the knee-jerk, are seldom seen amongst the younger population. A curious fact, too, is that although one member of the family may have a markedly pellagrous skin, the others are perfectly healthy. Anæmia is almost invariably associated with it. Personally, what I have seen of the condition of pellagrous skin would not lead me to necessarily connect it with a nervous disease.

Congenital abnormalities.—THE LANCET of July 3rd, 1909, contained an interesting annotation on a letter from Professor F. E. Madden (to whom I am much indebted for assistance and advice in preparing this article) on the Rarity of Congenital Deformities in Egypt. I had paid no particular attention to the point before, but since then, while examining 12,000 men, I have made notes of the number and varieties of such abnormalities. THE LANCET remarked in the above annotation that "Professor Madden considers it to be impossible to endeavour to explain this rarity of congenital defects in Egypt, unless the time-honoured scapegoat of our too modern civilisation be invoked to account for their frequency in other countries." Readers of these articles will be interested to hear that our "too-modern civilisation" is innocent of this slur. A glance at Tables III. and IV. will show this clearly.

TABLE III.—*12,000 Men, aged 21 years (of the same type as those of Table I., but not including them).*

Paralyses—		Other congenital deformities of fingers or toes	11
Arm, 7	38*	Various other congenital deformities	5
Leg, 23		Hare-lip	5
Arm and leg, 8		Cleft palate	2
Talipes	15	Enlarged mammæ	10
Ankylosis of, or fractures about elbow	31	Absence of pectoralis major	4
Flat-foot	16	Undescended testicles	9
Shortening of fourth metatarsal	28	Albinism	3
Webbing of second and third toes	16	Deaf-mutism	15
Polydactylism	7	Idiocy	8
		Leprosy	3

* 0·31 per cent.

TABLE IV.—*4947 Men and Boys, between 14 and 20 years, under 155 centimetres (of the same type as those of Table II., but not including them.)*

Patent umbilical ring, with or without hernia	168*	Polydactylism	2
Paralyses—		Other congenital abnormalities of fingers or toes	4
Arm	9	Undescended testicles	3
Leg	14	23†	Enlarged mammæ	8
Talipes	6	Idiots	10
Shortening of fourth metatarsal	9‡	Deaf-mutes	3

* 3·3 per cent. † 0·45 per cent. ‡ Out of 2442 only.

I am unaware of the percentage per population of congenital abnormalities in other countries, but these would seem to be by no means rare in Egypt. Professor Madden's note is interesting as proving the ignorance of the native as to the possibility of treatment for such conditions as cleft palate and harelip. The extent of intermarriage between near relations in the country villages would lead one to expect a comparatively large proportion of defective children.

A condition I have noticed as being particularly common is a congenital shortening of the fourth metatarsal. The fourth toe is markedly retracted, usually behind the level of the fifth toe. The phalanges are not apparently abnormally short, and the metatarsal bone can be felt, unfractured, but with the head very much farther back than usual. Commonly the digit is pushed upwards by the pressure inwards of the fifth toe. The condition is sometimes unilateral and sometimes bilateral. In one case the second metatarsal, and

in a second the third metatarsal, was in a similar condition in conjunction with the fourth. In two other cases the third metatarsals alone were shortened. Only once have I seen a similar condition in the hand when the second and fifth metacarpals were markedly shortened with no evidence of fracture. The most common form of polydactylism is a supernumerary fifth digit on the foot. One man had eight digits on the left foot. Another common condition is webbing of the second and third toes, either partial or complete.

A curious abnormality is a congenital absence of one pectoralis major. I have seen four cases out of the 12,000 of Table III. In two of these the pectoralis minor was also absent. The men seemed unaware of anything particularly abnormal, and movements of the shoulder were free. One cannot help being struck with the frequency of patent umbilical rings, with or without hernia. Inguinal hernia is not very common in young men.

Paralyses.—The vast majority of these are infantile and are very common indeed. More commonly of the leg than of the arm, they are usually said to be congenital, but the natives' statements are by no means reliable.

Injuries to the elbow.—I am at a loss to explain the frequency of fractures of the lower end of the humerus and of the condyles, dislocation of the lower epiphysis of the humerus, and ankylosis of the elbow-joint. The great majority of them have occurred in early childhood. Very possibly falls from donkeys and from the backs of cattle may be an explanation. Occasionally I have had ankylosis of the joint ascribed to small-pox.

Cairo.

Medical Societies.

OPHTHALMOLOGICAL SOCIETY.

Tubercular Iritis.—Inter-fascicular Endothelioma of the Choroid.—Intracranial Tumour.—Exhibition of Cases, &c.

A MEETING of this society was held on July 8th, Mr. G. A. BERRY, the President, being in the chair.

Mr. INGLIS TAYLOR showed a case of Tubercular Iritis of Severe Type, and raised the question of the efficacy of treatment by tuberculin.—Mr. E. TREACHER COLLINS said that when he used tuberculin in small and gradually increasing doses he did not get very good results, but recently he had had one very satisfactory case so treated. In one patient single nodules had disappeared from both eyes, and there had been no return.—Mr. J. B. LAWFORD and Mr. A. MAITLAND RAMSAY had found benefit from the use of tuberculin.

Mr. GEORGE MACKAY read a note on an Inter-fascicular Endothelioma of the Choroid situated at the Optic Disc. At the beginning of the year the patient had a momentary loss of power in his leg and fell. A fortnight later he fell while rising from his chair and lost consciousness momentarily. A week later he discovered that weakness of vision was due to a defect in the right eye; a neurologist found nothing abnormal in his fundi, and ordered iodide of potassium and abstinence from tobacco and stimulants. When Mr. Mackay saw him he was a full-blooded man, 60 years of age, and was said to have had no cardiac trouble or kidney disease. There was no specific history. In his youth he had been noted for his feats of strength. His pupils reacted to light and to convergence; the right a little less than the left. The media were clear, and the tension was normal. From his shooting experiences the patient knew his right eye had good sight until four years ago. Recently he had occasionally had a sensation as if a long hair was touching his eye, and he had also colour sensations in the right eye. The left fundus was normal. The disc of the right eye presented a curious appearance, difficult to define until the pupil was dilated with homatropine. That showed the surface of the disc to be elevated by a tumour substance with adherent vascularisation. The veins disappeared in the disc substance. It was possibly a congenital abnormality. There was a narrow dark ring of pigment, especially towards the macular side. Iodide of potassium, which had been discontinued, was advised to be recommenced, but a month later there was no appreciable alteration. The patient did not note any dimness of vision. In the test-types he missed those to the left of the mid-line. Dr. Berry then saw the patient and confirmed the diagnosis, but desired to see him again in six weeks' time. In order to be safe Mr. Collins was also asked to see him, and he said there was a new growth in the right eye, involving the optic nerve. Mr. Collins advised that the eye should be removed as soon as possible. Since the excision, the tumour was found to be a mixed spindle-celled and round-celled sarcoma, but extending only a short distance into the sheath.—Mr. TREACHER COLLINS described the pathological appearances, and exhibited slides by means of the epidiascope.

Mr. LAWFORD read a further note on a case of Optic Atrophy and Oculo-motor Palsy due to Intracranial New Growth. The patient was a man, 40 years of age, who died in St. Thomas's Hospital on May 7th last. There had been a gradual increase of proptosis on both sides, and a large growth between the eyeball and the nasal bone on the right side. The tumour also appeared in the left temporal fossa, and the movements of the mandible became restricted. A new growth developed in the roof of the mouth. A few weeks before death the right cornea began to slough from exposure, and the right fifth nerve became almost completely paralysed, showing how extensive was the spread. There were headache and a low delirium, followed by coma, which terminated fatally. A necropsy the day after death showed that the growth had extended all over the skull and nasal cavity. The olfactory lobe and the optic nerve were involved. The specimen showed a large glistening tumour, lobulated, smooth on the surface, and covered by dura mater. Mr. Shattock examined the growth and reported that it was a rapidly growing chondroma. The vision began to fail 12 months before death.—Mr. R. W. DOYNE and Mr. F. HEWKLEY discussed the case, and Mr. LAWFORD replied.

Mr. E. A. DORRELL showed an Unusual Form of Cataract.

Mr. W. H. H. JESSOP showed a new form of Lamp.

Mr. ARNOLD LAWSON showed a case illustrating an Unusual Variety of Macular Hæmorrhage.

Mr. H. L. EASON exhibited a case showing Massive Exudate in the Choroid.

SECOND INTERNATIONAL CONGRESS OF ALIMENTARY HYGIENE (BRUSSELS).—The Deuxième Congrès International d'Hygiène Alimentaire et de l'Alimentation Rationnelle de l'Homme, to give it its full title, will be held in Brussels from Oct. 4th to 8th next, under the patronage of H.M. the King of the Belgians and of the Belgian Government. National committees have been constituted for Germany, England, Austria, Denmark, Egypt, Spain, Finland, France, Greece, Hungary, Italy, Norway, Netherlands, Portugal, Sweden, Switzerland, Canada, and the United States. For England the president is Mr. J. A. Gardner, M.A., F.I.C., professor of chemistry and hygiene, St. George's Hospital Medical School, and the honorary secretary is Mr. Cecil H. Cribb, B Sc., F.I.C., 136, Shaftesbury-avenue, London, W. There are 33 members of the English committee, whose names are all well known as public analysts or professors of physiology and chemistry or engaged in public health work. The meetings will take place in the Assembly Hall in the Universal Exhibition grounds. The subjects for discussion are the energy value of foods and alcohol, value and effects of cooking, influence of micro-organisms, use of antiseptics in food, purity of water, sterilisation of foods, contamination of food on sale in streets and shops, clean milk, analysis of butter, control of mineral waters, food legislation in different countries, legal responsibility of food vendors, the workingman's food, and cold storage of meat. The subscription is 20 francs (16s.) for ordinary members and 10 francs (8s.) for associates. Relatives of an ordinary member are admitted as associates. They cannot make any communications and do not receive the publications. The official languages of the Congress are French, German, English, Italian, and Spanish. The president of the organising committee is Professor L. Fredericq, and the secretary-general, to whom all subscriptions must be sent, is M. E. Grognard, 3, Rue de Louvain, Brussels. Post-office orders are preferred, payable to Mr. Sterckx, treasurer for the Congress, who will give a receipt for the same.

Reviews and Notices of Books.

Treatises on Fistula in Ano, Hæmorrhoids, and Clysters, by John Arderne, from an Early 15th Cent. Translation. Edited with Introduction, Notes, &c., by D'ARCY POWER, F.R.C.S. Eng. Published for the Early English Text Society by Kegan Paul, Trench, Trübner, and Co., Limited, London; and by Henry Frowde, Oxford University Press. 1910. Pp. xxxviii.–135 and Index. Price 15*s.*

THE study of British medical history has of late years come much to the fore, and the foundation of the Fitz Patrick Lectures has been the means of enriching the medical profession with an admirable account of early medicine in these islands, as set forth in the lectures by Dr. J. F. Payne and Dr. Norman Moore. Dr. Payne's second set of lectures dealing with British medicine in the thirteenth century are, we believe, shortly to be published in book form, while we now have before us an impression of an early fifteenth-century translation into English of one of the most striking treatises of an English surgeon of the fourteenth century—namely, that upon Fistula in Ano, by John Arderne, who was born in 1307.

Patients in the Middle Ages, and, indeed, for some centuries later, must have endured a good deal from their medical attendants as well as from their disease. Anæsthetics were practically unknown, surgery was crude, wounds were commonly dressed with corrosives to "mundify them," and remedies, both internal and external, were often of appalling nastiness. To quote only one, another English medical man—namely, John of Gaddesden, physician to Edward I.—says, in speaking of colic: "Item balneum in quo ponantur omnia stercora quae possunt inveniri, mire valet in ventoso dolore." Small wonder that mediæval patients were accustomed to repeat Psalms lvi. and lxix. (lv. and lxviii. in the Vulgate) before they took their physic. It is one of Arderne's claims to praise that he modified the practice of his day in the direction of cleanliness and never meddled with a wound unnecessarily. Fistula was common in mediæval times and was much dreaded by surgeons. Complete fistulas were, as a rule, considered best left alone, and even if treated were so only by cautery, or by being slowly divided by a ligature being passed through and daily tightened up. Albucasis, however, who died in 1013, did recommend division by the knife. Arderne's operation was a modification of that described by Albucasis and he seems to have met with a fair measure of success, a success probably due to the simplicity of the remedies which he applied to the wound. They consisted of sponge pressure to stay the hæmorrhage, and afterwards the application of a styptic powder, such as burnt vitriol and alum. The dressing was the white of an egg with a bandage and the wound when washed was merely cleansed with warm water. An enema of oil with the yelk of an egg was also given, and Arderne lays stress upon the point that the wound is not to be dressed too often. To lay down such directions in the fourteenth century required no small amount of moral courage, but although Arderne met with success in many instances professional opinion was against him, and, says Mr. Power, "In spite of his success surgeons preferred to mundify their wounds and use incarnatives for nearly five hundred years after his death."

Arderne had a high ideal of the duties of his profession; higher, indeed, than the ideas of his immediate predecessors Henri de Mondeville and William of Salicet, although Lanfranc, who died in 1306, laid down rules for the manner and behaviour of the leech which are unexceptionable from the ethical point of view. He was also well read, and one of the points which strike anyone who studies the works of mediæval writers of medicine is the enormous number of other writers to whom they refer or quote from. Books were scarce and were the luxury of the rich and of corporations. In fact, it may be said that the very life of a secular corporate body such as the University of Oxford in her early struggles with the friars depended upon books. Gifts of books were entered in College chartularies quite as carefully as gifts of land, and the donors asked for prayers for their souls, which the recipients willingly gave. William Reed, Bishop of Chichester, ob. 1385, who gave a magnificent donation of books to Merton and New College, asked for prayers not only for himself but for the persons from whom he bought the books. Thus he writes in one of his books, "Liber Magistri Wilemi Reed, Episcopi Ciscestrensis, quem emit a venerabili Patre Domino Thoma Trillek Episcopo Roffensi. Oretis igitur pro utroque." But Arderne, and to an even greater degree John of Gaddesden, must have had access to a well-stocked library. Gaddesden, it must be remembered, was the King's physician, while Arderne was of the household of John of Gaunt, so that they were both in a position to obtain access to libraries.

As a lively picture of fourteenth century surgery and of the opinions of a surgeon of that date Arderne's treatise is full of interest. Mr. Power's introduction and notes are most illuminating for the reader who is not very well up in the little known subjects of mediæval medicine and surgery, and as the MS. Sloane 6, from which the translation was mainly taken, is wanting in the chapter about how to know the signs of the moon, this information, together with an astronomical table, has been supplied from a MS. in the Bodleian Rawlinson 355. Astronomical considerations were paramount in mediæval times with regard to the giving of medicines or of operating, though, curiously enough, Gaddesden does not mention them in his "Rosa Anglica." But with all their erroneous ideas as to anatomy, physiology, and pathology, the old masters of medicine knew and taught a great deal which is by no means unworthy of the recognition of surgeons and physicians of to-day; and both the society which has now published Arderne's work and the editor thereof should earn the thanks of medical men.

Medical Diagnosis: a Manual for Students and Practitioners. By CHARLES LYMAN GREENE, M.D., Professor of Medicine, &c., University of Minnesota. Third edition, revised. With 7 coloured plates and 248 illustrations. London: Rebman, Limited. 1910. Pp. 725. Price 15*s.* net.

THE appearance of a third edition of this book sufficiently shows that it is appreciated, and we recognise in it very definite merits. It is on rather different lines from ordinary volumes on diagnosis, containing as it does a considerable amount of information on etiology, morbid anatomy, prognosis, and so forth, besides diagnosis proper. It thus covers much of the ground of a text-book of medicine, only treatment being omitted. Its information is, however, mainly arranged with a view to facilitating diagnosis of disease, and this side of the subject is for the most part very fully dealt with. Here and there we have to complain of deficiencies, as in the paragraph on urinary calculi, in which no clinical features are given, the only diagnosis considered being the chemical distinction between various forms of concretions. A large number of illustrations are inserted, mostly of the "thumb-nail" order, and of very diverse degrees of merit. Incidentally we may note that the left-hand block in Fig. 169 has been inserted upside down. A good deal of new matter seems to have been added in the present edition. Some of the information with regard to parasites is very inaccurate: thus it would be difficult to cram a larger number of errors into a few lines than in the paragraphs headed "Oidiomycosis or psorospermiasis," which contain the following: "Psorospermes gregarenidae [*sic*] or psorazoa are occasionally

found in man in connexion with obscure febrile ailments ..... the lesions resemble the granulomata, but are found to contain coccidia. ..... The fungus cells may be identified without staining. ..... Budding forms strongly resemble the yeast fungus, but sporulation has also been observed." It is apparently implied that gregarines are the same as coccidia, and that both are fungi, whereas they are separate groups of the sporozoa (not "psorazoa"), which are protozoan organisms. Spelling is not a strong point: thus we find "pestes major" for pestis, "maculæ cerulæ" for cæruleæ, "myesthenia" for myasthenia, "Teichmann's" disease for Reichmann's. In spite of these faults we like the book, which contains an immense amount of information, closely packed, and is good value for the money.

Myom bei Schwangerschaft, Geburt und Wochenbett. (*Myoma in Pregnancy, Labour, and Childbed.*) By Dr. THEODOR LANDAU of Berlin. With 17 plates. Berlin: Urban and Schwarzenberg. 1910. Price M.60.

NOT long ago it was generally held that uterine myomata did not develop in young women, and that myomata and pregnancy never occurred together. The combination of myomata with pregnancy is not very frequent, but Dr. Landau has had in his private clinic 21 cases where total hysterectomy or supravaginal amputation of the uterus was performed during pregnancy and two cases where such operations were done in childbed. In all the cases where extirpation or enucleation was performed in pregnant women the pregnancy was uninterrupted. Probably no other gynæcologist has operated upon so many of these cases, and Dr. Landau draws many interesting conclusions from his experience. Of 250 cases of hysterectomy for myomatosis, 182 showed symptoms of a previous pregnancy and only 68 had been sterile; of the latter category 15 showed other morbid conditions which may have led to sterility. Dr. Landau notes, and offers an explanation of, the interesting fact that women with uterine myomata often become pregnant at a rather advanced age. According to him, a myoma, like a foreign body, produces contractions of the uterus by means of which the growth obstructing the genital canal becomes eventually displaced and a free passage restored. That previously sterile women may become pregnant after enucleation of myoma is shown by three of his cases. In the second chapter the connexion between myomata and pregnancy is considered, also the retrogressive metamorphosis of myomata, the influence of the myoma on abortion, on tubal pregnancy (two cases), on the mechanism of labour, and on atony and rupture of the uterus. In the third chapter the symptoms of myoma in pregnancy are described. The fourth chapter contains valuable hints for differential diagnosis. In the last chapter treatment is discussed. First the author deals with the procedure to be adopted when myomatosis is found to be present at an obstetrical operation; he then discusses the treatment of pregnancy complicated by the presence of a myoma. He is of opinion that a dead or premature fœtus should, from an operative standpoint, be dealt with as a submucous myoma. In the case of a living or viable fœtus, however, the treatment must be different, as the preservation of the fœtus is its principal object. The results obtained by the author in cases of myoma complicated with pregnancy are just as excellent as those obtained in uncomplicated cases, where the mortality was only 0·7 per cent. In the clinic of the University of Prague the mortality was 5·6 per cent. Of 283 cases of myoma operated upon by the author only two have died from the operation.

Dr. Landau's work is beautifully illustrated and well written.

LIBRARY TABLE.

The Operations of General Practice. By EDRED M. CORNER, M.A., B.C. Cantab., F.R.C.S. Eng., Surgeon in Charge of Out-Patients at St. Thomas's Hospital and Surgeon in Charge of the Infectious Wards; and H. IRVING PINCHES, M.A., M.B., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., Clinical Assistant to the Children's Hospital, Great Ormond-street, late House Surgeon at St. Thomas's Hospital. Third edition, revised and enlarged. London: Henry Frowde and Hodder and Stoughton. 1910. Pp. 358. Price 15*s.* net.—We have reviewed with approval the two earlier issues of this book, and we consider that it has fully merited the success it has attained. Comparatively few changes have been required because of the short interval between successive publications. The additions to the first edition appeared in a separate chapter in the second edition, and a similar plan has been followed in the preparation of the present issue, the recent additions being included in the final chapter. As these additions deal with many subjects they form a rather heterogeneous chapter, for they include such subjects as axillary infusion, excision of the umbilicus, vesical lavage after prostatectomy, intravenous production of local anæsthesia, suprapubic drainage, the treatment of mastitis with vacuum glasses, and so on. An examination of this volume has only served to confirm the opinion which we previously formed. It should prove of the greatest assistance to those in general practice who desire to perform some of the less serious operations of surgery.

An Index of Symptoms with Diagnostic Methods. By R. W. LEFTWICH, M.D. Aberd. Fourth edition. London: Smith, Elder, and Co. 1910. Pp. 451. Price 7*s.* 6*d.* net.—We reviewed the second edition of this excellent little book some eight or nine years ago, and can only repeat the praise which we then gave it, with the addition of saying that the present edition contains more matter, although in less space than former editions. The space allotted to diagnostic methods has been increased, and, so far as we remember, fuller explanations have been given of eponymic signs and symptoms, e.g., Stellwag's sign, Bolognini's symptom. This latter is a most useful feature of the book. Seeing how progressive a science is medicine, the book is marvellously up to date, for so far as we have checked it we have only failed to find mention of one condition of disease, and that the condition known as "tuberose sclerosis," upon which a paper was recently read before the Edinburgh Medico-Chirurgical Society and reported in our issue of May 14th (p. 1351). That Dr. Leftwich's book has reached its fourth edition shows that it has been a success. An examination of the book indicates that the success is well merited.

Grundriss und Atlas der Speziellen Chirurgie. (An Introduction to, and an Atlas of, Special Surgery.) Von Professor Dr. GEORG SULTON. Part II. With 40 coloured plates and 261 illustrations. München: J. F. Lehmann. 1910. Pp. 624. Price 16 marks.—We have on so many previous occasions spoken in the highest terms of the excellent handbooks published in the series of Lehmann's medical hand atlases that it seems almost unnecessary to state anything in praise of this one before us. As our readers no doubt already know, these excellent little text-books and atlases appear in several languages, and they are characterised by a very large number of excellent illustrations. This, one of the latest volumes of the series, is fully equal to any of its predecessors which we have examined, and the illustrations are extremely good. It is only by publication of large editions in several languages that it has been possible to include so many excellent coloured illustrations at a comparatively low price. The text is useful, but the chief value of the work resides in the illustrations.

The Oxford Colleges. By ELSIE M. LANG. London: T. Werner Laurie. Pp. 258. Price 1s.—Guide books to Oxford are many in number and of varying excellence, but considering the size and the price of the one before us we can truthfully say it is one of the best that we have seen. It gives a short account of the various colleges as they would be visited in a walk starting from Worcester, the college nearest to the two railway stations, and walking thence by way of St. John's, Balliol, Trinity, Wadham, Keble, and so back to Hertford, New College, Magdalen, and so on. Miss Lang is evidently an enthusiastic lover of Oxford, but her enthusiasm has marred her judgment in one matter, when she says of the "Eights" that it is pleasant to "watch the long slim boats, manned by Oxford's best oarsmen, strive to pass one another." But in view of the rest of the work this little slip does not much matter. The book is illustrated by well-reproduced photographs.

St. Bartholomew's Hospital Reports. Edited by H. MORLEY FLETCHER, M.D. Cantab., and W. MCADAM ECCLES, M.S. Lond., F.R.C.S. Eng. Vol. XLV. London: Smith, Elder, and Co. 1910. Pp. 476.—This is a specially good volume, and not the least important of its contents is a well-illustrated paper by Dr. H. G. Adamson on cases in the Skin Department, dealing especially with Dermatitis Artefacta. Dr. R. A. P. Hill contributes a long paper on Splenic Anæmia, and other papers of interest are on Perforation in Enteric Fever, by Mr. C. Gordon Watson; on the Influence of Local Injury in Determining Disease, by Sir Dyce Duckworth; on Bacillus Coli Infection of the Kidney during Pregnancy, by Mr. J. Barris; and on Cases of Persistent Œdema treated by Lymphangioplasty, by Mr. W. Bruce Clarke. A valuable portion of the book is devoted to a report on X ray Dermatitis, by Dr. H. Lewis Jones, Mr. L. Bathe Rawling, and Dr. Adamson. The second half of the book contains the usual reports from the medical and surgical registrars.

Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXX. Fasc. 2. 1910. Pp. 103–186. London: J. and A. Churchill. Price 4s. net.—The fasciculus contains the accounts of more than 30 cases which were brought before the society during the past six months, many of them of considerable interest. Mr. N. Bishop Harman exhibited a case of Multiple Superficial Atrophic Areas of Irides in old Kerato-iritis of Inherited Syphilis. 22 atrophic areas of varying depth could be counted in the right iris and 13 in the left. Two figures display the appearances seen. Both pupils were completely blocked with lymph except for a small area in the left pupil at the superior external quadrant. Mr. Harman also describes a case of Exophthalmos and Facial Deformity (as in oxycephaly) without Deformity of the Skull Cap in an intelligent girl. He thinks that the term oxycephaly or "Tower skull" is incorrect since all the ocular and facial characteristics commonly associated with oxycephaly may be present without any sign of deformity of the skull-cap. Mr. A. W. Ormond gives a case of Recurrent Lacrymal Tumour on the Right Side. Mr. M. S. Mayou brought forward an interesting case of Congenital Anterior Synechia with Buphphthalmos (anterior staphyloma). The history of the affection, as Mr. Treacher Collins remarked, was valuable as showing that a congenital anterior synechia might be due to a developmental defect apart from ulceration. Mr. George Coats regarded the case in the light, not of a staphyloma due to a perforated corneal ulcer, but as resulting from a lack of differentiation in the mesoblast which surrounds the anterior chamber. There are some good illustrations of the appearances presented by the cases described, as those of Mr. A. C. Hudson of an unusual form of retinal disease, Mr. Leslie J. Paton's case of connective tissue formation in the disc, Mr. J. B. Lawford's case of episcleral tubercle, Mr. R. Foster Moore's case of subretinal hæmorrhage, and Mr. R. R. James's contribution to the bacteriology of panophthalmitis. The volume is a compendium of the transactions of the society, and furnishes useful references to most of the cases that have been brought before that body.

International Clinics. Edited by W. T. LONGCOPE, M.D., Philadelphia. Vol. IV., Nineteenth Series, London and Philadelphia: J. B. Lippincott Company. Pp. 320.—Amongst the numerous interesting contributions to the last number of this well-known publication is one by Dr. C. B. Longenecker (Philadelphia) on Colour Photographs in Relation to Surgery. A brief account is given of the attempts hitherto made to produce satisfactory photographs in colours. Dr. Longenecker is of opinion that the autochrom process yields the most satisfactory results. Though seemingly intricate and requiring many steps to complete the picture, the process itself is fairly simple and is easily within the grasp of any person familiar with the underlying principles of photography. The technique is described, but it is admitted that failures are many. Nevertheless, good photographs may be obtained, and some are given which show the advantages of a colour process over the ordinary black and white pictures; for example, a colour photograph of a case of lupus vulgaris and photo-micrographs of carcinoma of the breast and of gangrene of the foot. Dr. Longenecker is possibly correct when he says that in spite of its faults the autochrom process represents an advance far beyond anything that has yet been introduced for scientific photography. Doubtless, he says, in the future it will be perfected and simplified, or perhaps some other process better adapted to daily requirements will be forthcoming. Amongst other contributions to this volume may be mentioned the following: The Use of Tuberculin in Treatment, by Dr. Louis Hamman (Baltimore); Diagnosis and Treatment of Pernicious Anæmia, by Dr. W. L. Bierring (Iowa); and the Use of Ethyl Chloride as a General Anæsthetic, by Dr. W. Estell Lea (Philadelphia).

JOURNALS AND MAGAZINES.

Jahreskurse für Ärztliche Fortbildung. (*Annual Course of Post-graduate Instruction.*) In 12 monthly parts. 16 marks per annum. Munich: Lehmann.—The May number of this journal is devoted to a consideration of diseases of the nervous system. Professor Edinger writes on the structure of the central nervous organs, briefly discussing the neuron theory and the comparative morphology of the brain. Lumbar puncture and the variations found in the amount, pressure, and cytology of the cerebro-spinal fluid are described in a usefully succinct manner. The presence of choline in this fluid in cases of epilepsy has special significance with regard to the destructive changes proceeding in the nerve elements. The findings of cytology and of the various forms of Wassermann's reaction in the cerebro-spinal fluid of syphilis, tabes, and general paralysis are of especial interest. The section on spinal cord diseases is chiefly occupied by the consideration of acute poliomyelitis. The epidemic and infective characters of the disease receive the fullest treatment. Professor H. Vogt writes about encephalitis of children and discusses the mechanism of the lesions left by this disease, its clinical manifestations and differential diagnosis. The question of the surgical treatment of epilepsy is treated chiefly with regard to the Jacksonian variety. Graf's figures relating to 146 cases of this disease, in which recovery lasting more than half a year followed operation 35 times, are given, and Krause's views on this subject are discussed. Professor Otto Binswanger deals with the subject of Psychiatry. A short historical and philosophical introduction

deals chiefly with the relation between structural defects and functional disorders of the nervous system. H. Berger's experimental researches on the temperature of the brain, and his deductions therefrom as to the energy involved by intellectual processes, are of great interest. The complicated problems involved in the connexion between the facts known about the physiology and pathology of the brain and the various mental processes are discussed in the light of recent researches, especially those of Monakow, Tschermak, Brodmann, Fischer, Strohmeyer, Binswanger, and Berger. Organic psychoses are shortly discussed by Professor Hans Berger. Dementia paralytica receives the fullest treatment both as regards its pathology and diagnosis. Psychical disorders associated with arterio-sclerosis of the cerebral vessels are described, and their diagnosis and treatment are discussed. The whole number affords a most valuable *résumé* of recent work on the nervous system.—The June number is devoted to a consideration of the diseases of children. Professor Pfaundler introduces the subject of the digestive disturbances of infants by discussing the physiology of nutrition both in breast- and bottle-fed children. The relation of the food substances to the digestive cells and the great importance of the difference between the mother's milk and cow's milk are considered. This latter is not simply a question of the relative proportion of the various food constituents, but involves the biological relation between the cells of the infant and albuminous substances of their own kind or those of a foreign nature. This factor very greatly complicates the question as to the nature of the toxic substances responsible for the nutritional disorders of infants which may be brought about by any disproportion between the digestive capacity and the nutritional demands. Finkelstein's work on the digestive disorders of bottle-fed infants is given at some length—in fact, it forms the bulk of this article. The normal amount of food to be assimilated is regarded as equivalent to 100 calories per kilogramme of body-weight, and the various nutritional disturbances are considered in relation to their variation from the normal. The symptoms of faulty nutrition are described under the headings of: (1) variations in body-weight, (2) variations in temperature, (3) abnormal conditions of the stools, (4) urinary anomalies, and (5) other symptoms. The treatment is also considered under various headings, viz.: (1) means of increasing the digestive capacity, (2) means of decreasing the work demanded of the digestive organs, and (3) the best manner of administering carbohydrate food. This article ends with a most valuable tabular classification of the digestive disorders of infants. They are divided into: (1) disproportion between supply and demand, (2) dyspepsia, (3) decomposition, and (4) intoxication. The symptoms, functional reactions, diet, and therapeutics of each class are set out in parallel columns. Dr. Ernst Moro writes on the recent work relating to tuberculosis in infancy. The various methods of diagnosis, von Pirquet's and the tuberculin ointment, are considered in some detail, and their limitations and fallacies are fully discussed. Hamburger and Monti's work on the incidence of tuberculosis at various age-periods[1] is epitomised. The relations of bovine and human tubercle are briefly considered. As a result of the fulness with which digestive and tuberculous affections of childhood are treated other diseases of infancy are not mentioned.

[1] THE LANCET, July 9th, 1910, p. 119.

Mr. Vaughan Grey will give a special matinée in aid of the Middlesex Hospital Fund at the Boudoir Theatre, Pembroke-gardens, W., on Thursday, July 28th, at 3.30 P.M., for which an interesting programme is announced. The entertainment is under the patronage of Prince Francis of Teck.

METROPOLITAN HOSPITAL SUNDAY FUND.

UP to Thursday morning, July 14th, about £45,000 had been received at the Mansion House, the collections at the churches generally showing an increase. Among the additional amounts are:—

	£	s.	d.
St. Peter's, Eaton-square (with St. John's, Wilton-road) ...	477	0	0
Essex Church, Kensington	274	0	0
Hampstead Parish Church	120	0	0
St. Mary's, Kilburn	117	0	0
St. Thomas's, Portman-square	102	0	0
St. Peter's, Bayswater	101	0	0
Brockwell Park Open-air Meeting...	100	0	0
Christ Church, Mayfair	96	0	0
Roehampton Parish Church	77	0	0
St. Andrew's, Well-street	70	0	0
St. John's Presbyterian Church, Forest Hill	69	0	0
St. Paul's, Upper Norwood	64	0	0
Reigate Parish Church	62	0	0
Holy Trinity, Wandsworth	60	0	0
Christ Church, Hampstead	54	0	0
St. John's, Kennington	53	0	0
Willesden Presbyterian Church	51	0	0
A. B. C.	50	0	0
St. Augustine's, Honor Oak...	47	0	0
St. Mary Aldermary	46	0	0
St. Andrew's, Ashley-place	46	0	0
Highgate Presbyterian Church	44	0	0
All Souls', Langham-place	41	0	0
Emmanuel, West Hampstead	33	0	0
St. Martin's-in-the-Fields	38	0	0
Kensington Congregational Church and Sunday School ...	37	0	0
All Saints', Notting-hill	36	0	0
Trinity Presbyterian Church, Bromley	36	0	0
Christ Church, Streatham-hill	36	0	0
Brixton Hill Wesleyan Circuit	33	0	0
All Saints', Blackheath	32	0	0
All Saints', West Dulwich	31	0	0
Greenwich Parish Church and Missions	31	0	0
St. Michael's, Stoke Newington	30	0	0
St. Stephen's, Lewisham	29	0	0
St. James's, Norlands	29	0	0
St. George's, Campden-hill	29	0	0
Orange-street Congregational Church	28	0	0
St. John's, Upper Holloway...	26	0	0
St. Mark's, Kennington	26	0	0
St. Mary's, Balham	26	0	0

DAMAGES FOR LIBEL AWARDED TO A MEDICAL PRACTITIONER.—An action for libel was recently tried before Mr. Justice Ridley and a special jury in which Dr. W. B. Benjafield, medical officer to the Edmonton Union, was the plaintiff, and Messrs. E. H. and W. Crusha, proprietors and editors of the *Tottenham and Edmonton Weekly Herald* and the *Wood Green Weekly Herald*, were the defendants. The libel arose out of observations made at a meeting of the Middlesex County Council at which a Mr. Cole made a speech in opposition to a proposed extension of accommodation for lunatics, which speech was reported and commented upon by the defendants in their newspapers. In respect of a report which was admitted to be a fair and accurate account of what was said by the speaker, published without comment, the learned judge, when he came to sum up the case, told the jury that no damages could be awarded to the plaintiff. Another paragraph, however, dealing with certain remarks of Mr. Cole at a later date, contained comment, and is thus quoted in the reports of the trial:—

The remark made by Mr. Cole at the meeting at Wood Green to discuss the problem of the Poor-law and the unemployed conveys the idea that a very unsatisfactory arrangement at present exists with respect to certifying lunatics at the Edmonton Union. He says hundreds of persons are certified as lunatics who are not lunatics, but there are guineas behind the certifying of lunatics. This is a very serious statement to make, and it becomes the bounden duty of Mr. Cole, as chairman of the Board of Guardians, if he is aware of abuses, to endeavour to take effectual steps to prevent them. His remarks go to endorse the views we expressed in our leading article last week that there should be no such fees in matters of that sort.

The case for the plaintiff was to the effect that as part of his duties consisted in certifying lunatics, in respect of whom fees were paid to him in addition to his salary, the paragraph complained of suggested that he was influenced by the prospect of earning fees in the giving of certificates. For the defence it was urged that the words complained of did not express belief in the statements of Mr. Cole or reflect upon the character of the plaintiff, but were fair comment upon Mr. Cole's utterances, challenging him to prove the truth of his allegations. The jury did not accept the latter view and found for the plaintiff, awarding him £100 damages, for which judgment was given with costs.

THE LANCET.

LONDON: SATURDAY, JULY 16, 1910.

The Coroners' Law and Death Certification (Amendment) Bill.

A SUMMARY was given in THE LANCET of July 2nd of the Bill introduced in the House of Commons by Sir WILLIAM COLLINS for the amendment of the law relating to the certification of deaths and the holding of coroners' inquests. All are aware of the difficulties which lie in the path of any measure for which the Government of the day is not directly responsible, but the subject of the Bill in question is of great public importance, and we sincerely hope that it may receive serious consideration. In this we do not refer so much to changes of administration and of local jurisdiction sought to be brought about by some of the Clauses of Part I., as to those alterations of the law which necessarily follow in order that Clause 16 of the Bill, the opening Clause of Part II., may be carried into effect. This contains a principle the establishment of which the medical profession has long desired to witness, and the neglect of which hitherto has vitiated our vital statistics and made easy the operations of the criminal and the quack. Clause 16 is as follows: "No death shall be registered under the Registration Acts without the delivery to the registrar of a certificate of death duly signed by a registered medical practitioner, or by a coroner after holding an inquiry or inquest." In order to make this provision effective a preceding section has sanctioned the holding of an inquiry by the coroner, fortified, if necessary, by a post-mortem examination, which inquiry need not be followed by an inquest if it results in the coroner being satisfied that the deceased died a natural death. In this connexion we turn to Clause 26 of the Bill and find that one of the provisions of Part III., described as "Miscellaneous," is as follows: "Any dead child which has issued forth from its mother after the expiration of the 28th week of pregnancy, whether alive or dead, shall be the dead body of a person within the meaning of the Coroners Act, 1887, and this Act, and a person within the meaning of the Births and Deaths Registration Act, 1874." The object aimed at thus is the checking of the evils arising out of the burial without registration of children which are, or which may pass as, stillborn. It is an object of great importance, but we call attention to matters of detail in connexion with the manner in which it is to be attained. We apprehend that the medical practitioner attending the birth of a stillborn child can hardly be deemed, without statutory provision to that effect, to have attended the deceased "during his last illness," and that therefore he cannot certify the cause of death himself and is under no obligation to give information as to the "death" having taken place. Presumably the relatives are expected under Clause 20, Subsection 2, to inform the coroner, who will hold an inquiry and, if an inquest does not appear to be necessary, will give a certificate. Such an inquiry will be held on the ground that normally children are born alive, and that therefore a stillbirth is *primâ facie* an unnatural death, and in cases where a medical man has been in attendance at the birth the inquiry will consist chiefly in asking him to report the circumstances. If we are right in supposing that this is what is intended, and if Clause 3 of the Coroners' Act of 1887 will bear the construction suggested, reliance will have to be placed upon the statement of the medical attendant, and this being the case it is a matter for consideration whether the certificate of a medical man should not suffice for the burial of a stillborn child at whose birth he has been present. Whether this be permitted or not, the inquiry, which in the contemplation of the Bill will often conclude the matter without an inquest being held, is an enlargement of the responsibilities of the coroner that will make the need for medical training on his part of greater importance than ever.

It is not, however, proposed by the Bill to confine the office to registered medical practitioners, for Clause 5 proposes that "No person shall be appointed a coroner unless he be a practising barrister of not less than five years' standing, or a solicitor of not less than five years' standing, or a registered medical practitioner who is also a barrister or a graduate in law of a university in the United Kingdom." We have no doubt that a medical man who is a barrister, and more especially one who has seen something of the practice of the law in criminal courts, is the person best fitted to be a coroner. In the new circumstances indicated above we would suggest that a medical man, even without having passed the examinations required by the Inns of Court, would be far more likely to perform his duties efficiently than any barrister or solicitor without medical qualifications. A little practical work and observation would soon supply any defects due to not having learnt that which is necessary for a call to the Bar, but for one who only possesses the legal qualifications specified no practice or observation as a coroner can take the place of the long and laborious practical education that precedes the registration of a medical practitioner. The inquiries necessitated by the registration of stillbirths afford an example of duties which such a one would find it difficult to perform efficiently and without undue friction with those concerned. It is, perhaps, intended that this difficulty shall be met by the following section, but the precise position destined for the medical men referred to is not made quite clear, and the responsibility for the due performance of his own duties must ultimately rest with the coroner himself. Clause 10: "Any county or borough council may appoint one or more medical investigators or pathologists in each coroner's district to assist the coroner in his inquiries and inquests, and to conduct post-mortem examinations. Such medical investigators or pathologists shall be paid such remuneration out of the county or borough rate as the county or borough council may determine."

Part II. of the Bill deals with the registration and certification of death and burial, and contains several sections directly affecting the medical profession. For the satisfactory carrying out of these the willing coöperation of medical practitioners will be necessary, and we are surprised to see that,

apparently, it is not proposed that they should be remunerated for the performance of new and responsible functions. The Bill is silent upon this important subject and only provides that in the case of medical witnesses at inquests, who are not the investigators or pathologists referred to above, fees shall be fixed by regulations made by the Secretary of State, instead of by statute as heretofore. The need for consideration of this question will readily be appreciated. It is contemplated that the medical practitioner who has attended the deceased in his last illness shall certify the fact of death after inspection of the body as well as the cause of it, and a new form of certificate of an exhaustive nature is appended in a schedule. It is also proposed (Clause 19) that "Every medical practitioner who shall give a certificate of death shall, within 24 hours after such death takes place, send such certificate to the registrar of deaths for the district in which the death took place." This proposal has no doubt for its object the supplying of prompt information to the registrar, but we must point out that the medical practitioner is to be subject to a fine of 40*s.* for any infringement of this part of the Bill, and that under the clause he is to be bound by a time limit of 24 hours from the moment of death, a period liable to curtailment to any extent by delay on the part of those who should inform the medical man that his patient has died. We would suggest that the 24 hours, during which he has to inspect the body, should run from the time when he receives the necessary information. Further, when no medical practitioner has attended, the relatives, friends, or other persons having cognisance of the death are to inform the coroner, but (Clause 20, Subsection 2) if a medical practitioner has attended during the last illness and is unable to give a certificate of the cause of death, it is he who is to inform the coroner forthwith both of the fact of death and of the reason why he does not certify the cause of it. The provisions relating to the notification of death contained in the Bill follow lines suggested by the Death Certification Committee of 1893, and are in amplification of general recommendations made by the recent Departmental Committee which inquired into the law relating to coroners, death registration being, strictly speaking, outside the scope of reference. In other respects, to speak generally, the Bill gives effect to recommendations made by the latter committee, and contains, besides the points to which we have referred as being of direct interest to the medical profession, much which concerns those members of it who occupy the post of coroner, but this will have been gathered from our summary published on July 2nd.

Street-trading by Children.

AT whatever points the report of the Royal Commission on the Poor-laws may have failed to win universal assent, no dissentient opinion has been heard with regard to the views expressed in it upon street-trading by children and young persons. All who have given consideration to that report are agreed that many thousands of our population of both sexes who drift into pauperism, crime, and immorality as adults, being then physically and mentally unfit to be healthy and useful citizens, owe their downfall to the position in which they find themselves on leaving the public elementary schools in which the compulsory portion of the education provided for them has been conducted. All also recognise the fact that the difficulty of improving the situation created is largely due to the outward temporary prosperity which awaits the boy, and in a lesser degree the girl, freshly released from school and to the ready opening offered by the "blind alley" occupations. In these they are able for a time to earn more money and to lead what are to them more agreeable lives than if they applied themselves at once to seeking that laborious training which alone can fit them for earning their living honourably when grown up, and of all the unsatisfactory occupations which "lead to nothing," or which, at all events, lead to nothing useful, street-hawking is admittedly one of the worst. We hardly need the findings of a departmental committee appointed by the Home Office in order to be convinced of this, but such a committee has now collected evidence and has issued its report.

The majority, including the chairman, Mr. J. A. SIMON, K.C., one of the ablest legal members in either party of the House of Commons, consists of seven out of eleven of the committee, and the minority of four members do not dissent from their fellows as to the existence or the importance of the evil to be combated, but suggest the application, for the present at all events, of less drastic remedies. We do not propose to recapitulate at any length either the reasons given for seeking to abolish street-trading by children or the evidence upon which they are based. The daily newspapers have given full extracts from the report, which can be obtained by those who desire to study it. An Act of Parliament passed in 1903 permits and recognises a system by which boys and girls of immature years can earn weekly incomes amounting in some localities and in suitable circumstances to 20*s.* a week; they can live lives independent of all control, associating with adults of whom the least undesirable are loafers on the kerbstone, wasting their earnings on gambling, smoking, and frequenting music-halls, eating no regular meals, and seeking no regular rest at nights. Some of them, wherein lies the difficulty of dealing with the matter, assist by their earnings deserving parents who are in temporary or permanent financial straits; others are the victims of parents and dependents who are dissolute and idle. The majority of the committee recommends that all street-trading be forbidden for boys until the age of 17, and for girls until the age of 18 years. They desire that the definition of street-trading should exclude the work done by errand boys and the like who are employed by tradesmen to serve regular customers, and they would place the enforcement of the law in the hands of the local education authorities, cases being heard in the children's court or, failing such a court, in a court of summary jurisdiction. The importance of these proposals will readily be recognised, and the difficulties in the way of carrying them out successfully so as to substitute a benefit to the community for an unquestionable evil will not be far to seek. The opponents to reform will include the children themselves, who, no doubt, will find a few sympathisers to make their complaints heard, and in the majority of cases their parents and those who profit by their undesirable industry. The supporters of it should be found in all thoughtful citizens and also in those who would gain by the enforced removal of rivals in trade, or by an

increased supply of young people needing employment by them. Recognising the difficulties and hardships likely to be brought about by the total prohibition advised by the majority, the minority, who will no doubt secure a measure of support for the compromise which they put forward, prefer to recommend the prohibition of street-trading up to the age of 18 years where it can be shown that other suitable forms of employment are available, and where a local organisation has been established for assisting parents and children in finding suitable forms of occupation for the children. In other cases the minority would refuse or withdraw a licence where the local authority is satisfied that street-trading is not being carried on for any beneficial purpose, while they suggest that it should be made a condition of a licence for boys over 14 that they should attend technical or continuation classes while holding the licence. Finally, they recommend the prohibition of all street-trading by girls up to the age of 18 in large towns, subject to further inquiry as to the case of costermongers employing children in London, and similar classes of traders elsewhere.

We doubt the efficacy of any system founded upon compromise and upon the promise of supervision in such a matter, while admitting the difficulties and, in some cases, the hardships which will attend prohibition. In connexion with the question of hardship, it will not be forgotten that we are proposing to interfere with the earning of a livelihood, more or less precarious, but nevertheless of importance to themselves and others, of more than 22,000 children under the age of 16 years, now licensed to trade in the streets in England and Wales, exclusive of London, where 13,873 boys and about 1000 girls were known to be trading in the streets in July, 1909. On the other hand, it will be remembered that this large army, the magnitude of which can only be estimated through the system of licensing (which is not universal), is recruiting the forces of pauperism and crime in a far greater degree than it is contributing to the public prosperity. The conditions in which the children of our working classes grow to maturity in our cities and large towns must necessarily fall short of the ideal in a vast number of cases, but any definite and practical proposals for their amelioration will have the support of the medical profession. Our readers must all recognise the physical evils inseparable from street-trading as an occupation for children of either sex.

Signs of Life.

THE moment at which the individual dies can usually be definitely determined by the cessation of the heart and failure of respiration, but it is a much more difficult matter to settle the time at which the various tissues of the body pass into a state of death. In ordinary practice we depend upon a manifestation of motion as a sign of life; yet matter may be apparently passive and yet living. The problem was one which greatly interested JOHN HUNTER a century and a half ago. He noted the different manner in which living and dead matter resisted cold: dead matter responds to the surrounding temperature, living matter strives to maintain its temperature in spite of its surroundings. By using such a test he was able to show that the fowl's egg is composed of living matter; he placed two eggs in a freezing mixture—one which had been killed previously by being frozen, the other a fresh egg. In the freezing mixture the dead egg became frozen seven and a half minutes before the fresh one. He devised tests to show that blood was a living tissue; the sign of death was coagulation. He regarded contractility as the best sign of life in arteries. He found by an ingenious series of experiments "that the vessels of the umbilical cord have the power of contraction (and are therefore alive) above two days after separation from the body"; a truth which has been amply confirmed by the recent obervations of Professor MACWILLIAM. Had HUNTER been with us to-day he would have found more delicate means at his disposal—means which would have permitted him to answer not only the question: "Is this tissue alive?" but, in the words of Professor WALLER, "How much is it alive?" Indeed, we owe much to Professor WALLER for the means now at our disposal; he has been a pioneer in the application of electrical methods to the study of life. He has done more: he has succeeded in condensing within the covers of a charming little book[1] 20 years of experiment and observation on the electrical reactions of living matter—a book which may be read, understood, and enjoyed by learned and unlearned alike. The means now at our disposal is the galvanometer, especially that form of it invented by Professor EINTHOVEN—the delicate string galvanometer. It catches and records the slightest movement in living matter. A muscle cannot contract, a nerve conduct, or a gland secrete and escape observation in the presence of a galvanometer. It marks the breaking down, or katabolism, of living matter which accompanies activity by a negative deflection of the mirror; it registers the upbuilding, or anabolism, which follows activity, the period of rest and restoration, by an upward or positive deflection. The "positive" and "negative" variations which past generations of learners have cold-shouldered as physiological bugbears are now on a fair way to a more friendly footing with medical students.

The lens of the eye is almost the last part of the body from which one would expect a definite vital reaction; its appearance is that of a passive piece of optical apparatus. Professor WALLER discovered not only that it was alive, but also the means to make it write its own living story. His attention was drawn to it in the following way. He was investigating the electrical changes in the retina of the excised eye; the retina responded to light and to pressure; the galvanometer recorded the degree of the response; in a couple of hours no response was obtainable: the retina was dead. Professor WALLER observed that the reaction was not confined to the retina; there was a disturbing factor in the anterior part of the eye which was traceable to the lens; the lens therefore became the subject of experiment. Compression gave a reaction or electrical discharge—the "blaze" current of Professor WALLER—which caused a negative deflection of the mirror.

[1] Physiology, the Servant of Medicine (Chloroform in the Laboratory and in the Hospital). Being the Hitchcock Lectures for 1909, delivered at the University of California, by Augustus D. Waller, M.D., LL.D., F.R.S., Director of the Physiological Laboratory of the University of London. Hodder and Stoughton. 1910. Price 5s.

The dead lens when compressed left the galvanometer unaffected. When on holiday at the seaside Professor WALLER found that the lens of the fishes' eye yielded definite reactions, but in London no result could be obtained until supplies were derived directly from the fishermen. Professor WALLER thus found himself in possession of a test for determining the freshness of his fish-supply; at least, he could detect the moment at which the lens of the fish had passed into a state of death. But his most fascinating experiments were carried out on leaves; he selected them because they offered an opportunity of examining living matter spread out in a thin stratum. He found the galvanometer could measure the action of a passing sunbeam on a green leaf; some leaves like those of the chestnut and ivy were "sluggish and sulky"; others, like the "fresh young leaf" of the iris, were "lively and communicative." Leaves vary in their reaction according to youth and age, the surrounding light, and heat; they can be made drunk and sober and the degree of their intoxication measured. He found that the vitality of seeds could be measured; there was no need to wait for the spring and the sowing to see if they would sprout. If they were all freely and fully alive as good seed should be, they gave a definite electrical reaction when compressed; if they were dead and useless, compression left the galvanometer untouched. The seed and the leaf can make no movement whatsoever which will escape the sensitive ear of the galvanometer. Nowadays man pries very closely into Nature's ways; it looks as if some day he may break through that barrier, hitherto deemed impassable, which separates him from the discovery of the nature of life itself.

Professor WALLER is a poet among experimenters, as may be seen from the references we have made to his work, but his little book also shows that he is a philosopher among physiologists. He is not one who is shocked when ni the course of pursuits desinged only to satisfy his own curiosity he stumbles across facts which may prove useful to practical men. He is interested in more than the reactions of living matter and the signs of life; he wishes to establish a closer and more amicable relationship between the physiologist and the physician. He recognises two kinds of medical men: those who "want to know"—the workers at the laboratory benches—and those who "want to help"—the workers by the bedside. The two groups, we dare think, are not so antagonistic as Professor WALLER believes; medical men combining a desire to know and a desire to help are not so uncommon. One has only to look round and see that the methods which Professor WALLER—as a man "who wants to know"—applied in the laboratory some 20 years ago to the study of the human heart are being adopted by the men "who want to help" and have become the methods applied at the bedside to-day. The galvanometer supplies the clinician with the most delicate means of analysing disturbances in the action of his patient's heart. There is no better introduction to this new chapter in the electropathology of the heart than that now supplied by Professor WALLER'S little book. Our readers will also find there an introduction to "Jimmie." The bearer of this name is a pet bulldog and has not only played a part in the pioneer work which his master has carried out, but was the unconscious cause of a wave of merriment that spread over the civilised globe when some 12 months ago his antivivisecting friend interrogated the Home Secretary on his behalf.

Annotations.

"Ne quid nimis."

MR. H. W. COX.

MEMBERS of our profession will learn with deep regret of the death of Mr. Harry W. Cox, one of the pioneers of X ray diagnosis, a distinction which practically cost him his life. His sad case was only recently brought into prominence in our columns by an appeal for funds for the sufferer and his family by Sir William Treloar. Several years ago he was compelled to relinquish his business owing to the terrible ravages of X ray dermatitis. He exhibited a marvellous patience in suffering, and in spite of the great infliction which early and repeated contact with the X rays brought him he continued to discuss the possibilities of their future application in ministering to the needs of humanity. Medicine owes Mr. Cox a deep debt of gratitude for the instruments which he has placed at its disposal. He was never happier than when he was perfecting an induction coil or getting maximum and steady results with his X ray apparatus. He was the author of a good many patents. Mr. Cox studied also the practical application of wireless telegraphy, and in this field again his genius served him well in the improved results which he obtained by paying great attention to details. His disease, when once established, pursued an unrelenting course, and at length released him in his forty-seventh year from unspeakable pain. To his immediate friends, his wife and family, it must be a consolation to realise how universally his name is regarded as belonging to that illustrious roll of men who have laid down their lives for their fellows.

WHAT IS MÉNIÈRE'S DISEASE?

THERE seems to be considerable confusion on the subject of Ménière's disease, if we are to judge by the widely varying conditions reported from time to time as instances of that affection: in fact, it may almost be said that the term is applied indiscriminately to any and every case of giddiness associated with a lesion of the ear. The usual description given of the disease is that it consists of a triad of symptoms—tinnitus, giddiness, and vomiting—and that in classical cases the onset is apoplectiform. Other symptoms may be included such as nystagmus, nausea, swaying, fainting, &c., but, as Dr. Alexander Bruce and Dr. J. S. Fraser, of the Royal Infirmary, Edinburgh, remark in a paper on the association of Ménière's symptoms with facial paralysis, which will be found in the *Review of Neurology and Psychiatry* for June, it cannot be too emphatically stated that this "disease picture" is merely that of a lesion of the membranous labyrinth or eighth cranial nerve. It would be preferable to discard the term altogether, since the pathological conditions which may give rise to Ménière's symptoms are legion. Thus variations in labyrinthine pressure, or excessive movements of the labyrinthine fluid, electrical stimulation, vascular congestion or anæmia, hæmorrhage into the labyrinth (in caisson disease, traumatism, bleeding diseases, arterio-sclerosis, the exanthemata, &c.), acute or chronic inflammatory conditions, neuritis of the auditory nerve, degeneration of the same, tumours, neuroses, &c.—such are

some of the factors producing the condition. As ultimately a pathological classification is the only scientific one, and until our knowledge of the aural labyrinth in disease is more complete, we should adopt the suggestion of the authors and speak of Ménière's symptoms rather than Ménière's disease. It is an interesting fact that almost all the cases of sudden occurrence of Ménière's symptoms in which a microscopic examination of the inner ear has been made have been cases of leukæmia; the case here referred to, however, was non-leukæmic. The patient was a pier-master, aged 65 years, who, on Dec. 1st, 1907, had a long day of exposure to cold on the pier, but went to bed at night feeling quite well. The following morning he woke up suffering from extreme giddiness and from deafness and noises in the left ear; the left side of his face was paralysed, but no history of vomiting was forthcoming. While in bed he felt as if surrounding objects were moving round him, and when he did get up he had to hold on to various articles of furniture in order to get about the house. He tended to fall to the right side, the side opposite to the ear lesion. The diagnosis was made of neuritis of facial and auditory nerves in the internal auditory meatus; hæmorrhage in this situation was also mentioned as a possible cause of the symptoms. There was no evidence of middle-ear disease, and the sense of taste was retained on the tongue; further, herpes auricularis was not present. The patient died suddenly from syncope some months later. The left inner ear and facial and auditory nerves were subjected to a painstaking and detailed examination. Briefly summed up, the condition was as follows: The inner ear was almost normal; the membranous labyrinth also was almost normal; there was no hæmorrhage in the endo- or peri-lymphatic spaces of the cochlea, vestibula, or canals. In the internal auditory meatus there was a considerable amount of hæmorrhage between the epineurium and the seventh and eighth nerves: this was most marked above the former. There was no hæmorrhage between the dura mater and the epineurium. The vessels in the meatus were markedly thickened and the muscular coat had undergone a hyaline change. The hæmorrhage did not extend into the Fallopian canal and did not therefore affect the geniculate ganglion.

THE COLD BATH IN THE PREVENTION AND TREATMENT OF INFANTILE CONVULSIONS.

IN the *South African Medical Record* recently Mr. M. G. Pearson has brought forward a new view of the pathogenesis and treatment of infantile convulsions. He rightly points out that the long list of causes of convulsions given in the text-books, ranging from teething and worms to epilepsy and astigmatism, are not causes. Putting aside gross brain disease such as meningitis, Mr. Pearson finds that in all cases of convulsions a high temperature precedes the fit or is present at its onset. The convulsions, therefore, cannot be the cause of the pyrexia. Either the pyrexia is the cause of the convulsions or they both result from a common cause. That the former alternative is true is suggested by the fact that by experimentally raising the temperature of animals convulsions are induced, and by Mr. Pearson's experience that by keeping down the temperature of children convulsions can be prevented, or, when they have occurred, can be cut short by reducing the temperature. So certain has he become of this that he tells the parents of acutely ill infants that they need not have much fear of convulsions with a temperature under 102° F., that above 103°, no matter what the illness, there is a considerable chance of convulsions, and that it is for them to watch the temperature by means of a thermometer, and lower it if necessary by cold baths. He compares convulsions to the boiling over of a kettle; they are produced and can be prevented in the same way. Among the cases given to prove this thesis are the following. A boy, aged 4 years, had a deep abscess in the neck. When seen he was unconscious, rigid, twitching, almost pulseless. The rectal temperature was 107°, and he was apparently on the point of death. He was put into a cold bath containing ice. After seven minutes the temperature had risen to 108°. It then began to fall rapidly; in 12 minutes it was 106°, his limbs were relaxed, and he began to look around. He was taken from the bath and kept nearly naked on the bed with a wall of canisters of ice around him for over an hour. A quarter of an hour after the beginning of the bath he was perfectly conscious. The abscess was cut down upon, but pus could not be obtained. In the evening the temperature rose to 105° and his hands and arms began to twitch. His father at once put him into an iced bath. The temperature fell and the twitching stopped. A few hours later pus burst through the incision and the trouble ended. A preliminary rise of temperature after putting the child into the cold bath was observed in other cases. It shows that a short bath is useless. The duration of the bath must be regulated by the thermometer in the rectum. But it should be remembered that once the temperature has begun to fall it will continue to do so. In another case, a boy, aged 5 years, had whooping-cough with bronchitis. While in bed his hands began to twitch and his eyes became fixed. The temperature was found to be 103°. The bed-clothes were removed and he was left with no covering except thin pyjamas. Almost directly the twitching ceased and in an hour the temperature fell to 101°. Mr. Pearson thus traverses the current treatment of convulsions by the warm bath and holds that "to put a feverish child into a bath, say, 10° hotter than itself can only increase the pyrexia, even though cold be applied to the head." The extent to which a hot bath will raise the temperature, even of a healthy person, is not generally realised. In his own case Mr. Pearson finds that a bath of 106° will raise his temperature 3·5° in a quarter of an hour, and in the case of his son, aged 8 years, the same result is obtained in half the time. If, however, the bath used for convulsions is only warm, as some direct, it will, he thinks, do less harm than a hot bath, and the subsequent exposure in drying will cause some loss of heat. The colder the bath the quicker it will reduce the temperature; shock may have to be considered and the bath gradually cooled, but in an urgent case there should be no delay. Such are the author's conclusions, and the matter is one upon which the experience of others is invited.

THE WORK OF THE GLASGOW PARISH COUNCIL.

WE have received two interesting pamphlets compiled by the authority of the Glasgow parish council, the first containing the statistical report of its inspector of the poor for the half year ending May 16th, to which are appended reports by the poorhouse medical officer and the medical superintendents of the parish hospitals; and the second being a supplementary report by the inspector of the poor upon the work done by the council under the Children Act, 1908. The statistics strike us as commendably complete and as supplying facts and figures relating to a wide variety of subjects, with regard to which the exchange of information between local authorities should be extremely useful. This is likely to be the case more particularly where the working of a new Act of Parliament is concerned, and when the task of administering it is necessarily more or less experimental. An example occurs in the reports before us, which shows

that the Children Act is a measure the ultimate effect of which must depend entirely upon the spirit in which it is carried out by local authorities. We refer to the powers given by Parts I. and II. for the protection of infant life and the prevention of cruelty to children and young persons. In carrying out the provisions of Part I. the attention of the parish council of Glasgow has been particularly directed to the misdeeds of a class of midwives whose business consists in conducting maternity homes where women can be delivered of their illegitimate children in secrecy, and where the infants are got rid of in circumstances which certainly justify the vigilance of the council. It has not taken that authority or the keepers of these "homes" long to discover the weak places of the new Act. The notice which now must be given to the local authority when any child is adopted for reward is not ordered when it is received without payment, and apparently there is a sufficient supply of persons willing so to undertake the care of children. The midwife who acts as a broker or agent receives a fee for so doing and for maintaining the child while it awaits its foster parents, but in the first place the statutory notice need not be given when the child is kept for less than 48 hours, and the midwives in question do not break the law if they have foster parents in readiness and hand over the child within two days of its birth or of its reception into their houses. Such children are not always born on the premises kept by the midwives, who supplement this branch of their business by advertising for infants and by obtaining them from anyone who may reply either in their own neighbourhood or elsewhere. We may point out also, although the inspector of the poor of Glasgow does not refer to it, that when the parent deals directly with the foster parent the fact of a payment having been made at the time of adoption is naturally less easily and certainly concealed than in the case of the professional agent and the foster parent, both of whom are interested in preserving secrecy and in refusing to reply to inquiries. The Glasgow council, we learn, has found it possible to prove the retention of a child by a midwife for two months while awaiting adoption, and yet to fail in convicting under the Act. In the instance cited the midwife's advocate set up the defence that the fee she had received was in respect of attendance bestowed upon the mother in childbirth, and not for the maintenance of the infant, a view which the sheriff accepted to the extent that he found the charge "not proven." The Glasgow council is, however, to be congratulated upon an excellent plan adopted by its inspector of the poor for checking a traffic in infants which is known to result in their being adopted by persons unfit to have charge of them, and in their becoming eventually in many instances a burden upon the parish. About three years ago the inspector arranged with the managers of the Glasgow newspapers and of the *Scotsman* that before inserting any advertisement by persons desirous of nursing or adopting infants they should obtain from them references as to their character and suitability from the inspector of the poor in whose parish they might reside. This course has been adopted with such success in Glasgow that the Local Government Board, to whom it was communicated, has taken the matter up, and the willing acquiescence of all respectable newspapers renders the operations of baby-farmers of the class described far more difficult than formerly. Strangely enough, the only difficulty that occurred seems to have been the refusal of inspectors of poor in some parishes to supply the references asked for on the ground that it formed no part of their duty to do so. It is to be hoped that their refusal has by now been brought before the councils to which they are responsible, and that their reluctance to assist has been overcome. The Glasgow council has amplified its policy in this respect by encouraging persons offering infants for adoption to refer to its inspector, who is able to advise them against undesirable localities and guardians. Outside this class of case the report gives several instances of cruelty perpetrated upon children by persons who have adopted them in return for substantial fees, where the offenders have been dealt with with varying success, including one in which not only had children been horribly neglected in a house devoid of all furniture, but blackmail had also been levied on an unfortunate mother to the extent of over £80. We note that at first the Glasgow council found a difficulty in bringing home to the class concerned the new law as to giving notice with regard to adoption. This difficulty seems now to have been overcome, for the notices given to the council have risen from 482 in November, 1909, affecting 552 infants, to 731 in the period under review, affecting 864 infants. The council is thus able to report the development of a better sense of duty towards adopted children, a satisfactory state of affairs which we hope will be maintained.

THE MEDICAL COLLEGES OF CANADA.

A FREQUENT Canadian correspondent writes:—"Five years ago, through the munificence of Mr. Andrew Carnegie, there was inaugurated in New York City the Carnegie Foundation. In the hands of trustees was placed an endowment fund of several million dollars to be expended for the benefit of teachers in the colleges of the United States, Canada, and Newfoundland. Bulletin No. 4 of the Foundation has just been issued, and treats of medical education in the United States and Canada in an interesting manner. At first there was no little opposition from some institutions which questioned the right of such an agency as the Carnegie Foundation to collect and publish facts and observations concerning them; objections were gradually overcome and the medical schools generally accepted the position. Indeed, they adopted the views of the Foundation and seconded its efforts, affording every facility for the Foundation to learn the opportunities and resources of the different schools. It is reasonable, therefore, to infer that the facts as published relating to the medical schools of Canada are absolutely true, while the conclusions deduced may be regarded as in the main correct. It is no news to the medical profession throughout the Dominion of Canada that some of its medical colleges do not come up to the standards and requirements of the Carnegie Foundation. This feeling was especially strong some six or seven years ago when amalgamation of Trinity Medical College, Toronto, with the Medical Faculty of the University of Toronto, the provincial university, was consummated. It was generally held that some of the smaller colleges, especially in Ontario, would do well to throw in their lot with the two larger institutions, and Professor William Osler expressed the hope that this would be brought about. But it must be remembered that in a young, sparsely-populated country like Canada denominational and local prejudices have been as rampant as commercial and material instincts. Also our colleges, hampered by insufficient income, have necessarily been manned by men who in large part had to earn a livelihood through the medium of their private practices. Earnest and diligent, hopeful, but lacking encouragement, these teachers probably accomplished as much good under prevailing circumstances as any similar body of men could do. Times and conditions, however, change and are changing rapidly in this new country; and now comes the report of the Carnegie Foundation, congratulatory concerning some of our medical schools and derogatory of others. The population of the Dominion of

Canada is put down at 6,945,228; the number of physicians, 6736—a ratio of 1 to 1030; the number of medical schools, 8. The attendance at these colleges is as follows: Queen's (Kingston), 208—teaching staff, 38; Western (London), 104—teaching staff, 20; Toronto, 592—staff, 68; McGill (Montreal), 328—staff, 99; Laval (Montreal), 217—staff, 8; Laval (Quebec), 92—staff, 22; Manitoba (Winnipeg), 115—staff, 41; Halifax, 63—staff, 23. Toronto and McGill are labelled excellent in the report; Toronto is said to have practically reached its level of efficiency, but McGill and Manitoba are held to be capable of considerable expansion. Queen's and Manitoba are said to represent a distinct effort towards higher ideals. But the Western school is described as being as bad as anything in the United States; this description is, however, on the face of it, unfair and overdrawn, as there are, or have been, colleges in the United States which made no pretence to teach, but sold their diplomas or degrees for a price. Laval and Halifax are reported to be feeble schools. All the faculties, except the Western, require a five-year course. The needs of the Dominion of Canada respecting medical schools could, it appears, be very well served by Toronto, McGill, Manitoba, and Laval at Montreal amalgamated with Laval at Quebec. The Western at London and Queen's at Kingston might be made to serve as feeding grounds for the large medical faculty of the provincial University of Toronto, where the McMaster University now and again coquets with the idea of a medical faculty. Years ago medical men of the provinces of Nova Scotia, New Brunswick, and Prince Edward Island were mostly educated at Harvard and other universities of the United States. Practically none is now. There is, though, a strong feeling in the maritime provinces for McGill; and if, in addition to the other modifications suggested, the Halifax Medical College became a preparatory school for McGill, ideals so far as medical colleges are concerned in the Dominion of Canada would be about reached, speaking for the country on the basis of its present population." Our correspondent, however, recognises that, as the West develops and expands, some day in the not very distant future there will be established a medical college in either Vancouver or Victoria. It will also be seen by reference to the letter from our United States correspondent[1] that the universities of the United States have received the reports of the Carnegie Foundation with very mixed feelings, and that in some instances legal proceedings are spoken of by the criticised institutions.

ST. MARYLEBONE WORKHOUSE INFIRMARY: THE WORK OF MR. J. R. LUNN.

AT their last board meeting the guardians of the poor of St. Marylebone parish paid to Mr. J. R. Lunn the unusual compliment of unanimously voting that he should receive from the Local Government Board the maximum superannuation allowance to which he is entitled, thus raising his retiring pension to £495 per annum. This was moved, partly on the grounds of the excellent service rendered by him as medical superintendent of the infirmary during the last 29 years, and partly in sympathy with the illnesses contracted by him in discharge of his duties. During his term of office the annual number of patients admitted to the infirmary had risen from 2273 to 2855, while the surgical operations have increased at least three-fold. In 1889, when statistics in this institution were first accurately made, 128 operations were performed, of which 30 were major operations, while in 1909 the operations were 386 in number, of which 79 were major operations. During the first four months of 1910 the number of operations has already exceeded those performed in the whole year of 1889. The surgical work was originally carried on under very difficult circumstances, with a very restricted supply of instruments, and operations had to be performed in the common day room or in one of the wards, but since 1902 a well-equipped operating theatre has been provided and all necessary appliances. This infirmary was truly the early pioneer of separate infirmaries, apart from workhouses, and every endeavour has been made to raise the staff of skilful, trained nurses on the lines of the best general hospitals. The reputation of the training school for nurses, which is a branch of the Nightingale Home, may now almost be said to be international, for Germany, Switzerland, and Norway have all sent representatives to be trained there. The physicians who conduct the official examination of the 64 nurses twice a year have often expressed themselves as highly pleased with the proficiency of the candidates. Every effort has been made to carry out the open-air treatment for tuberculous patients and to separate the phthisical from other patients, and the existing arrangements have lately been inspected and praised by the Local Government Board. Among other reforms which have been initiated during Mr. Lunn's tenure of office, attention may be drawn to the daily examination of the milk-supply, which has consequently improved in value; to the reconstruction of the receiving rooms, where every patient is examined before being sent to the wards; and to the mortuary, which has been removed from the main building and neighbourhood of the milk- and meat-supplies to a separate building, where there is also now a bacteriological laboratory. A late return of the Local Government Board, comparing the expenditure of 26 infirmaries, shows that the cost of this institution represents the average expenditure of all of them. It will be remembered that Mr. Lunn was lately the recipient of the honorary diploma of F.R.C.S. Eng. It is, we believe, the first time that the honorary Fellowship has been conferred on a Poor-law medical officer, while it is interesting to recall that a similar honour was paid to the father of Mr. Lunn, once a well-known surgeon in Yorkshire.

THE PATHOLOGY OF TYPHUS FEVER.

AN outbreak of typhus fever in a certain district in Tunis has afforded an opportunity for some interesting pathological researches by M. Charles Nicolle, which are published in the *Annales de l'Institut Pasteur* of April 25th. He has succeeded in communicating the disease to certain monkeys, all previous attempts in this direction having failed, so that hitherto typhus fever has been regarded as a disease entirely special to man. The way is therefore now opened for an experimental study of this disease and for the discovery of the causal agent. M. Nicolle's observations are of sufficient importance to merit some brief description. His first attempt was made with Macacus cynomolgus. A cubic centimetre of the blood from a typical case of the disease, removed on the fifth day, was injected under the skin of the animal at the bedside of the patient. The result was entirely negative, even the temperature curve of the animal being unaffected. A similar negative result was obtained with a Chinese bonnet monkey (Macacus sinicus). With a young chimpanzee, however, he succeeded in transmitting the disease by inoculation of 1 cubic centimetre of blood from a case of typhus fever on the third day of the disease. After an incubation period of 24 days a typical attack of typhus fever occurred with a febrile period of seven days. A rash occurred on the face and behind the ears. M. Nicolle then inoculated a bonnet monkey with the blood of this chimpanzee in order to determine whether passage of the virus through an anthropoid would increase its virulence for the macaque, a surmise which proved to be correct, since the bonnet monkey developed the disease after an incubation

[1] THE LANCET, July 9th, p. 137.

period of 13 days. In collaboration with M. A. Conor some further investigations were carried out. Another bonnet monkey developed the disease 14 days after inoculation with blood taken from the first one on the second day of the disease. A third after a similar inoculation developed the disease on the same day—that is to say, without any incubation period. Further experiments with this bonnet monkey virus showed that other macaques, such as the Macacus cynomolgus, Macacus rhesus, and Macacus inuus, possess an immunity against the virus from the bonnet monkey. The dog and the white rat also proved to be immune. Human blood withdrawn from a patient not suffering from typhus fever has no immunising power for the Chinese bonnet monkey, but, on the other hand, blood from a patient with typhus fever appears to confer immunity against subsequent infection with virus from the bonnet monkey. Some further experiments also showed that the serum of a bonnet monkey convalescent from typhus fever possesses a definite toxicity, causing a rise of temperature when injected into other monkeys. This fact is of some importance, since it has been suggested that the serum of convalescent cases of typhus fever should be used in the treatment of the disease, a procedure which, according to these experiments of M. Nicolle, is not devoid of danger. Some interesting observations were also made, in conjunction with M. C. Comte and M. E. Conseil, demonstrating that the human body louse (pediculus corporis vel vestimentorum) can be an agent in the dissemination of the disease. It is well known that the disease flourishes most in conditions of overcrowding, poverty, and dirt, and in Tunis many circumstances pointed to the body louse as a means of infection. It was found that these parasites, contrary to the statements often made, feed upon blood and not upon epithelial débris, and also that they could live upon macaques as well as upon the human subject. Some of these parasites collected from healthy men were allowed to feed upon one of the bonnet monkeys on the third day of its infection with typhus fever, and were subsequently allowed to bite two other monkeys of the same species, both of which developed the disease. These results indicate what steps should be taken to prevent the spread of the disease in subsequent epidemics. M. Nicolle also made some interesting observations in collaboration with M. E. Jaeggy upon the blood in the experimental disease in monkeys. They found a necrosis of the polymorphonuclear neutrophiles more or less in proportion to the intensity of the disease. There was also an increase in the total number of leucocytes towards the end of the incubation period, a diminution during the disease with a relative increase in lymphocytes, and an accompanying myelocytic reaction.

CLEAN MEAT.

WE have more than once referred to the objectionable custom of many of our tradespeople of exposing articles for sale to the obvious contaminations of the street. In an appreciatory letter which a correspondent has been good enough to write to us in regard to our attitude on kindred questions, and particularly our recent plea for washing the strawberry, he points out how inconsistent the English people are in regard to sanitary observance. While we wash our bodies scrupulously, he says, and while we are careful to adopt only the most exacting sanitary precautions in our homes, we apparently exhibit no concern in regard to the treatment to which some of our food-supplies are exposed. This is true, and the most forcible example is meat, although we have complained again and again of the careless way in which bread is brought to our doors from the bakers. It is a matter of common observation that most English butchers hang the carcass or joints cut from it outside their shops in the streets. The object of this procedure is not clear unless it be to make a great show of stock, implying that the business is a well-patronised one, or it may be that in some way or other an "airing" seasons the meat and makes it tender. But it is by no means necessary that the "hung" meat should be exposed to street contaminations. It is not difficult to comprehend that street contaminations are a fact, having regard to the befoulment of the road by the horse and to the stirring up of this befoulment by rapid motor traffic passing over it. This exposure of meat in the street is apparently not allowed in many continental countries, and it seems to us that a similar prohibition should be in force in this country. It is probable, of course, that cooking would kill germs attached to the surface of a joint, but the boiling and roasting process is not necessarily an absolute safeguard, since germs which have found their way to the interior have been shown to survive cooking. The superiority of English meat as regards flavour and tenderness is due probably to the superior quality of English pasture, but considerable tone is given to it by judicious airing or "hanging." But let us have our meat clean. The fine quality of English meat has no connexion with its exposure to street impurities.

SUBCUTANEOUS INJECTIONS OF NATURAL MINERAL WATERS.

THE theory of the ionisation of inorganic salts in solution and its application to pharmacology have been fruitful in explaining the action of some of these substances when introduced into the animal economy. The interesting observations carried out some years ago by Dr. Sidney Ringer upon the importance of certain mineral salts for the maintenance of life and protoplasmic activity have become classical. He showed that in solutions of sodium chloride of the same strength as sea-water small marine organisms quickly died, whereas they survived if small quantities of calcium chloride and potassium chloride were added. By similar experiments with fish, tadpoles, ciliated organisms and cells, skeletal and heart muscle, he demonstrated the importance of these salts to living organisms in general. In the light of these observations and of the activity of ions pharmacologically it is not surprising that special attention has been directed to the mineral constituents of natural mineral waters and to artificial combinations of similar salines. Dr. C. Fleig of Montpellier has recently recorded observations upon the results following subcutaneous injections of natural mineral waters, and although he may perhaps be unduly sanguine of the value of his method, his work is of sufficient interest to merit notice. Dr. Fleig prefers to use the mineral water, if it come from a spring under aseptic conditions, without sterilisation, but if this process is essential he recommends filtration at a low temperature through a Chamberland filter under pressure. If the water has to be kept it should be preserved in sealed flasks made of yellow or red glass. Natural mineral waters may be hypotonic, isotonic, or hypertonic, as compared with blood plasma, and to render them isotonic dilution may be necessary for hypertonic waters, or the addition of sodium chloride, sea-water, or sugar for hypotonic waters. Dr. Fleig describes the results of his experimental investigation of mineral waters on injection into the veins or subcutaneously, and states that any mineral water can be used for this purpose in large quantity without any toxic or unpleasant effects, and, indeed, he affirms that they are even less toxic than normal saline solution, and that they may be used with benefit after severe or repeated hæmorrhages. He also found that many mineral waters at a suitable state of molecular concentration are capable of preserving the excitability of various excised organs and tissues to a greater degree than

normal saline solution. From a therapeutical point of view he maintains that they are useful in all conditions where injections of normal saline solution or of isotonic sea-water are employed. He also suggests that waters of special composition may prove to be of increased value in the treatment of diseases for which they are already employed by the ordinary methods if they can be given by injection. He is further of opinion that some useful investigations on similar lines to his own might be carried on at some of the springs, using fresh or "living" water in place of the water such as he has employed, which has had to travel from the spring. The superiority of mineral waters over normal saline solution Dr. Fleig attributes to their complex mineralisation, and particularly to the presence of ions such as calcium. Although he gives an imposing list of conditions in which he has tried them he admits that great discrimination must be exercised in their use, and that they cannot be regarded as substitutes for other methods of treatment.

THE LACK OF WARMTH.

ANOTHER week of the cold and often rainy weather which has characterised the present inglorious summer finished with Saturday last, the temperature being even more extraordinary in its lack of seasonable warmth than during the week preceding, and the allowance of sunshine even more meagre over a large portion of the country. In London the mean warmth of the afternoons was only 62°, a figure about 11° below the average for the time of year, while a similar condition was general over practically the whole of England away from the coast. On Saturday the temperature during the greater part of the afternoon was only 54°—a figure about 20° too low for the season. On the coast, where, as a rule, the summer heat of the daytime is less than it is inland, the divergence from the average was not so great, although it was sufficiently large to be called abnormal. The lack of sunshine is, perhaps, more regrettable from the point of view of health than the absence of the normal degree of warmth, especially in the large centres of population, where it was naturally most marked. In London the official observations of the Meteorological Office, taken at Westminster, showed no more than 16¼ hours, or about 2½ hours per day, much of which was recorded very early in the morning. An average July gives nearly 6 hours, and a bright one 8 or 9 hours per day. At Manchester a similar state of affairs prevailed, and the large cities of central England were scarcely more highly favoured. All sorts of theories have, as usual, been advanced to account for the general chilliness in these islands and a considerable part of the continent. According to some would-be authorities the comet is the culprit, while others attribute it to the increased employment of wireless telegraphy, without, however, offering a scrap of proof. There are, again, others who declare, conveniently forgetting all the fine warm summers that the last 20 years or so have supplied, that every summer is bad nowadays and that the climate has changed. The climate has doubtless changed since the time of the ancient Britons, for when the greater part of the country was covered with forest it is pretty certain that the weather was more rainy throughout the year, with a lower average temperature in summer than in modern times, and a somewhat higher one in winter. The carefully kept records of the past 40 years or so, however, prove that during that period there have been many cold and wet summers, as well as many fine and bright ones. Some were much wetter than the present has been so far, notably that of 1879 and that of 1903—only seven years ago. In the former year wireless telegraphy was but a dream, and in the latter it scarcely existed in practice. And as for the winters, there is no actual trustworthy record of such a continuously severe one as that of 1894–95. In the old days, about a hundred years ago, it is very probable that the Thames was frozen over in London, but before the building of the embankments, with no steam tugs ploughing the water, and relatively few barges and lighters on the river, such an occurrence was possible with a much less severe frost than would be necessary with the altered conditions of to-day. It is, as a matter of fact, true to-day as it has always been, that the climate of both summer and winter depends, in the main, on the relative positions and intensities of the high and low centres of atmospheric pressure, which is only another way of stating that it depends on the direction and strength of the main wind current. With a current of air coming, generally at a very brisk rate, from some point of the compass between west and north-west, and occasionally from north, as has obtained this year, the weather cannot be other than cool during summer, although not necessarily wet. But when, in addition, the centres of the cyclonic systems, whether large or small, travel directly over the kingdom or in its close proximity, as they have done of late, the general condition cannot fail to be more or less rainy. A warm or hot and bright summer is always accompanied by a higher average level of the barometer than a cold and wet one, and whenever this country experiences a very warm, dry spell, it can be taken for granted that it is under an anticyclonic *régime*. All the recognised meteorological authorities are agreed that the cause of such weather as that recently experienced is the unusual pressure distribution, but why the unusual condition should exist appears to be still an absolute mystery. There were evidences on Tuesday last of the beginning of a gradual change, the barometer started to rise, the wind shifted from its lately persistent quarter, the north-west, and veered to the eastward. There has evidently been a meeting of warm wet winds from the west and a cold downward current from the north, and the result has been a condensation or mist in the morning which had to yield to the sun. On Thursday the south-easterly wind promised to prevail, and with a steady glass we may look with confidence to a spell of summer weather.

THE POSSIBILITY OF TRAUMATIC TABES DORSALIS.

IN *L'Encéphale* for March, 1910, Dr. Ladame of Geneva has published an interesting article *àpropos* of a case of apparent traumatic tabes dorsalis which has come under his observation. Following on a severe railway accident, which cost the lives of several individuals in the same compartment as himself, a healthy married man, aged 52 years, developed all the characteristic symptoms of a profound traumatic neurosis. On the day after the accident medical examination of the patient revealed extensive bruises, a particularly severe contusion of the lumbar region, and general commotio cerebro-spinalis. Immediately after the accident the patient had been unconscious for a short time; thereafter he had wandered about in a subconscious state for several hours. Headache, vertigo, insomnia, pains in the back, incapacity for work, extreme feeling of fatigue—in short, all the symptoms of traumatic neurasthenia—continued for a long time with varying intensity. Finally, they commenced gradually to disappear. A few months after the accident it was discovered that he was beginning to show signs of tabes dorsalis. The sign of Argyll Robertson, which had not been noted during the weeks subsequent to the accident, made its appearance, while the knee-jerks became gradually more difficult to elicit, and were sometimes abolished. Slight disturbance of static equilibrium was noticed, and diminution of deep sensibility became apparent, more particularly on the left side. The question at once suggests itself: Is

there any relation of cause and effect between the accident and the tabetic symptoms? The importance of the subject in these days of litigation can scarcely be under-estimated. In former times traumatic tabes was not considered so unlikely as it has been since the work of Erb and Fournier; in fact, it may be stated that the opinion is almost universal that syphilis is the *causa causans* of tabes dorsalis. The sole episode of any significance in the history of the patient of Dr. Ladame was a slight attack of gonorrhœa 35 years before, but in spite of the apparent absence of syphilitic infection, it is necessary that all venereal incidents be excluded before one can prove traumatism to be the unique cause of a case of locomotor ataxia. It remains probable, then, that syphilitic infection cannot be set aside in the present instance. The no less important question arises: Has the railway accident been the exciting cause of a tabes which would otherwise have remained latent? This is a possibility which in view of present knowledge can neither be affirmed nor denied, nor is much light thrown on the subject from pathological, experimental, or clinical considerations. In the classical monograph of Hitzig on traumatic tabes he remarks that apparent cases of that condition ought not to be passed over in silence, and supposes that traumatism may somehow develop a toxin more or less identical in its action with that of syphilis. In only three of his cases, however, did tabetic symptoms follow a general nervous system shock, and pathologically the changes in the spinal cord were not entirely typical of tabes. The idea that traumatic tabes always affects some part regionally related to the injury cannot be sustained, according to Flechsig, who in the whole medical literature bearing on the subject found but two or three cases where a tabes said to be the result of injury to the head began with ocular symptoms. The well-known theory of Edinger that the site of organic nervous disease is determined by preceding functional exhaustion receives some support from experiments in which rats have been rendered "tabetic" by extreme muscular fatigue, but it cannot be said that the lesions found in their cords were entirely similar to those of tabes. Clinically, the difficulties in the way of solving the problem are great. The appearance of tabetic symptoms in an injured limb simply represents the pathological reaction of an injured part whose resistance is lowered. Fortunately, there is another aspect of the matter besides that which it is the work of scientific medicine to attempt to decide. The physician in compensation cases is more concerned with the degree to which the accident may have aggravated the symptoms of a tabetic or potential tabetic, and with the prognosis of the case. These are questions relatively much more simple than the problem to which allusion has been made. From the point of view of statistics it is worth noting that in a series of 1500 accident cases in which Professor Mendel of Berlin was called on for an expert opinion, tabes was diagnosed 11 times, but of these 11 only one patient had shown no symptoms before the accident, and in his case syphilitic infection was probable.

"SURNATATION" AND THE AVOIRDUPOIS OF THE SOUL.

A PLEASANT writer has described how, in schoolboy days, when he was fishing from some neglected jetty, he was horribly startled at the sudden gurgling upheaval from the deep green water in front of him of a long-drowned sailor, covered with seaweed and embrowned past recognition after an immersion of many days' duration. The *surnatation*, as the French medical legists call it, of the drowned has long puzzled the curious. That the drowned grow lighter after a lapse of days seems certain, though doubt has recently been thrown in these columns on the sudden lightening of the corpse on dry land immediately after death. We are not here concerned with the unctuous indecency of those who weigh a man in the article of death, and keep him on the scales, like a sack of merchandise, while the breath retires in gasps from his wasted frame. That inquiry after all is an ancient one, though it has been left to a transatlantic quidnunc to revive it as something novel. The question of *surnatation* is undoubtedly ancient, too, but its examination involves no breach of good taste and has been little attempted. In his Montpellier thesis, "Contribution à l'Étude de la Submersion de la Surnatation" (1906), Dr. Antonin Rouit has discussed the matter exhaustively. He agrees with his predecessors, notably Devergie, that the gases engendered by putrefaction tend to lighten the corpse until it rises to the surface. The putrefactive process is conditioned by the temperature of the water. In winter, for instance, this process is retarded and a body is slow in rising. In summer, on the other hand, and when the water is warm, a corpse rises to the surface in a very few days. Clothes, according to Dr. Rouit, play a great part in preventing the putrefactive process. He is no believer in the water-logging of the corpse. He has examined the drowned repeatedly and does not find water in the stomach or in the middle ear, though the bronchial tubes may be full of it. M. Rouit has occasion to quote Orfila repeatedly, but he is himself perhaps the chief authority on this strange and grisly subject. His thesis is a distinguished contribution to the huge sum of medical literature, almost always enriched with valuable bibliographies, published annually by the ancient Arabist University of Montpellier. In view of his researches, may we not suggest that the lightening of the corpse just after death, in normal circumstances on dry land, is due to the action of premature putrefaction, to what the old poets called the "beginnings of decay"? Twelve ounces or so is the amount of that lightening, and, apart from any theory of putrefaction, the wise old women who take delight in doing the proper thing when there is a death in the house—how they fly to rake out the fire for some tribal reason known only to themselves!—would tell us that several ounces, the exact figure being a matter of question, represent the weight of the last loss—to them a mysterious and abiding theme of discussion. The cannibal connects it with the smell of blood, with the sputum, and with any excrementitious matter. We may despise the cannibal, but he is our ancestor. A frequent writer in these columns has recorded that in early youth he believed the soul to be a dim grey oval thing, like a bladder or balloon, that had to find room somewhere inside him between the stomach and the lungs. A recent writer to the *British Medical Journal* refers to some half-dozen kinds of souls, from psyche onwards, misunderstood by many, but all such as the general practitioner must take into account in his daily round when dealing with "Healing by Faith"—faith in the medical man, presumably. Cruden's "Concordance" helps us not at all. "This word in Scripture," says Cruden, "especially in the style of the Hebrews, is very equivocal." What is the soul, and how shall it be weighed?

THE following is the list of officers and other members of council of the Royal Society of Medicine who have been elected at the annual general meeting for the society's year beginning on Oct. 1st next:—President: Sir Henry Morris, Bart. Honorary treasurers: Sir William Selby Church, Bart., and Sir Francis H. Champneys, Bart. Honorary librarians: Mr. Rickman J. Godlee and Dr. Norman Moore. Honorary secretaries: Dr. Arthur Latham and Mr. Herbert S. Pendlebury. Other members of council: Sir William Allchin, Dr. W. P. Herringham, Mr. H. T. Butlin,

Mr. D'Arcy Power, Dr. R. A. Gibbons, Dr. H. D. Rolleston, Mr. J. Warrington Haward, Mr. Charters J. Symonds, and Mr. E. F. White.

AMONG the recipients of the Civil List Pensions recently granted three names occur of great interest to the medical profession—viz., Mr. Thomas Bryant, Mrs. Mary Louisa Gamgee, and Miss Helena Stormont Murphy. Upon Mr. Bryant's eminent service to surgery there is no need for us to say a word; Mrs. Gamgee is the wife of the late Professor Arthur Gamgee, the famous physiologist and physiological chemist; while Miss Murphy is the daughter of the late Professor Edward William Murphy, who did valuable work in investigating the use of chloroform.

Dr. Dawson Williams, the editor of the *British Medical Journal*, last Saturday met with an accident due to a collision between motor-cars. The injuries which he received might have proved serious, but we are exceedingly glad to say that his progress has been in every way satisfactory.

Sir Alfred Downing Fripp, K.C.V.O., C.B., has been appointed an honorary surgeon-in-ordinary to the King.

BRITISH MEDICAL BENEVOLENT FUND.

AT the June meeting of the committee of the above Fund 21 cases were considered and grants amounting to £153 were made to 16 of the applicants. Appended is an abstract of the cases relieved:—

Widow, aged 62 years, of L.R.C.P., L.R.C.S. Edin. No income and dependent on children who cannot give much help. Voted £5.

Daughter, aged 53 years, of late L.R.C.P., L.S.A. Unable to obtain a situation on account of delicate health, and dependent on the uncertain help of friends. Voted £5

L.S.A., aged 67 years. Qualified late in life, and was obliged to dispose of a practice in London on account of ill-health. Has endeavoured to establish one at a seaside resort, but has exhausted his means, and does not yet cover his expenses. Children only able to give slight help. Voted £10.

Daughter, aged 59 years, of late M.R.C.S., L.S.A. Has maintained herself by teaching for many years, but is no longer able to obtain pupils. Voted £12.

M.R.C.S., L.S.A., aged 70 years. Has suffered from impaired vision for many years and is now nearly blind and quite unable to support himself. Voted £18.

Widow, aged 32 years, of M.D. Lond. Quite unprovided for at recent death of husband and endeavours to support herself by keeping poultry. Three children whom it is hoped to get into institutions. Voted £5.

Daughter, aged 69 years, of late L.R.C.P. Edin. Has been a governess for many years, but now only earns a few shillings a week. Voted £12.

Widow, aged 50 years, of M.B., C.M. Edin. Supplements a very small income by taking boarders, but has had two very bad seasons and is in delicate health. Seven children, aged 19 to 12 years; none at present self-supporting. Relieved 11 times, £126. Voted £12.

Widow, aged 63 years, of L.R.C.P., L.R.C.S. Edin. Is in delicate health and entirely dependent on a daughter who teaches in an elementary school. Relieved three times, £34. Voted £5.

Daughter, aged 67 years, of late M.R.C.S., L.S.A. Supported herself for many years and assisted several younger members of the family by keeping a school, but has been obliged to give it up owing to ill-health and is now practically incapacitated. Relieved once, £12. Voted £12.

Daughter, aged 53 years, of late L.R.C.P. Edin. Is a chronic invalid and dependent on her sisters who can ill afford to help. Relieved five times, £46. Voted £10.

Widow, aged 40 years, of M.R.C.S. Has a situation as a working housekeeper, but requires help for the holiday and other expenses of her two children, one of whom is in very delicate health. Relieved six times, £45. Voted £10.

Daughter, aged 59 years, of late M.R.C.S., L.S.A. Was fairly provided for, but lost everything by lending her capital to a friend on security which proved valueless. Relieved six times, £30. Voted £12.

Widow, aged 60 years, of M.D., M.R.C.S. No income; earns a precarious living by letting lodgings; children unable to help. Relieved six times, £72. Voted £12.

Deserted wife, aged 39 years, of L.R.C.P. Edin. Receives a home in return for services, and is given a little help by two of her children. Asks for a little assistance on behalf of the youngest daughter, who is a candidate for an institution. Relieved twice, £8. Voted £3.

Daughter, aged 54 years, of late M.R.C.S., L.S.A. No income, and unable to undertake laborious or continuous work owing to ill health. Relieved four times, £40. Voted £10.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole-street, London, W.

THE CONFERENCE AT EDINBURGH ON THE PREVENTION OF TUBERCULOSIS.

Annual Meeting of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Edinburgh, July 10th.

I GAVE last week a bird's-eye view of the Conference and propose now to deal more fully with the interesting debates. This will be the easier to do that I am informed that several important contributions to the first day's proceedings will appear this week in full in another part of this issue of THE LANCET.

The Avenues of Infection in Tuberculosis.

Punctually on Monday morning, July 4th, the Conference began its work without any opening ceremony, Professor OSLER, the President, calling upon Professor G. Sims Woodhead to open the discussion upon the Avenues of Infection in Tuberculosis.

Professor SIMS WOODHEAD, who spoke mainly on the dose of infection, commenced by protesting that many experiments have had results read into them which were not justifiable. Clinical and experimental observations differed widely and were not governed by the same general rules. In the experiment the amount of infectious matter would probably be much in excess of that producing disease in the ordinary course, while the minimum dose might produce the disease if absorbed by some susceptible person. The experiment had also been made with animals possessing a greater power of resistance than would be present in tuberculosis naturally incurred. When the bacilli were injected into an animal a large proportion got into the circulating blood, but did not appear to have any appreciable effect on the tissues, and the animal ultimately recovered. If an enormous dose was given, then we might expect tuberculous lesions in various parts of the body. But the human subject was infected by a minimum dose, and this constituted a distinct difference. The presence of tuberculosis in human beings was far more common than was generally believed. Probably more than 90 per cent. of the living had been affected at one time or another in their existence. Almost everyone who had reached the age of 45 years had been attacked. Through what channel? Through the lungs most frequently, through the alimentary canal sometimes. But the lungs, being in constant relation with the outside, gave the bacilli the best chances to enter. In the lungs the bacilli met with conditions that destroyed them if they were not too numerous. In the intestines the mucous membrane differentiated the sort of material that should be allowed to pass into the mesenteric vessels, and if bacilli are present in sufficiently large numbers the lymphatic glands will be affected. It was all a question of the number of parasites. If the intestinal canal were healthy and only a small number of tubercle bacilli are taken in there was no infection.

Professor J. G. ADAMI (Montreal) followed, and pointed out that it was impossible to dogmatise. They knew the numerous roads of infection but could not lay down the mode of infection in any particular case with any confidence. He agreed with Professor Sims Woodhead especially in regard to the unhealthy condition of the mucous membranes as a facilitating cause of tuberculosis. Many accepted medical convictions have proved false recently, so that they must walk warily, but the avenues of disease seemed almost always to be post natal. Infection of the newborn was more frequent than was generally imagined. If young calves were separated from infected mother cows they escaped disease. So also if infants are reared away from their infected mothers they will be spared. The bacilli may be diffused throughout the body and there is no tubercle, yet this blood will set up tuberculosis when injected into an animal. Infection of the tonsils and throat may be due either to infection by foodstuff or respiration, and many cases of infection of the lung have come from the ingestion of infected food. While the evil is localised

in the nose and nowhere else, we may say it comes from inhaling the poison and is a direct infection. But with an old lesion we cannot say what was the road of infection. The Canadian Government had subsidised schools for the children of Red Indians aged from 7 to 14 years. Almost every one of these children was more or less tuberculous before coming to the school, and yet none of these children were fed with cow's milk. They had fairly good health but did not recover readily from colds. The acute symptoms only set in after they left school. He thought they were mostly cases of human infection remaining dormant, and it was now proposed to organise out-of-door classes at the schools for these Red Indian children.

Dr. THEODORE WILLIAMS spoke next, chiefly upon infection through the skin. He pointed out that the classical case of the infection of a nurse's hand because she broke a spittoon at least proved that a wound in the skin could be an avenue of infection. At the Brompton Hospital they took elaborate precautions against such accidents, but, unfortunately, the nurses sometimes neglected to put on the gloves provided, and cases of infection through the skin had occurred. One man, after 20 years' work in the hospital, thought he was safe, neglected to put on gloves when cleaning the spittoons and was infected. He agreed that the intestines as well as the lungs were an avenue of infection. He had a long time ago made many experiments to see if drugs reached the lungs best by inhalation or from the intestines. He had convinced himself that he could not get iodine into the system by inhalation, but its presence could be noted in the urine five minutes after it had been swallowed.

Professor MCWEENEY followed, supporting the view that the lungs were the chief avenue of infection. The trachea in post-mortem examinations might seem to be infected, but this was probably caused by sputum from the previously infected lung. Rabbits fed on contaminated cabbage leaves had their lungs infected; this was probably due to aspiring the bacilli from the leaves they were eating.

Dr. JAMES RITCHIE said that it was admitted that there was not only one road. He agreed with Professor Woodhead as to the caution necessary in drawing conclusions from experiments, especially with the smaller animals, to determine the question of the avenues of infection in tuberculosis. Except the dog, they were mostly nose breathers, but man, as a talking animal, was obliged to abandon his nasal line of defence. Most men, he thought, were on the borderland of complete immunity, but this was not the case with the smaller animals. Man's susceptibility to tuberculosis could not be compared to theirs. Dr. Ritchie went on to point out that the circulation of the lymph was not analogous to that of the blood. There is a backward and a forward flow of lymph, and this is very important in regard to infection. We have overlooked this physiological aspect of the lymph. If the respiratory pump fills the heart a corresponding suction may occur from the lymphatic glands that surround the lungs. There was no reason why this might not have an important effect in the infection of the lung. In that case, seeing the position of the heart, the infection by this cause was more likely to occur on the right side.

A paper was now read from Professor BARTEL (Vienna), who pointed out that the study of immunity had produced some progress and awakened knowledge of new possibilities of infection, while helping to bring together rival schools. The first localisations of tuberculosis seemed usually to indicate that breathing was the chief road of infection. But the lung could be infected even by an injection into the bladder. The chief result of recent investigations is that we have to admit our ignorance. Immunisation experiments had demonstrated the importance of predisposition. In spite of continued divergence of opinion as to the road of entrance, there was no difference whatsoever as to the precautions that should be taken. To prevent infection we had to strengthen the body.

Dr. R. W. PHILIP spoke as a clinician and thought that more might have been said from the point of view of observing and studying the patients themselves. He agreed that we had to examine the susceptibility of the mucous membrane, but at the same time we must study how far the social life was likely to devitalise the mucous membrane. He had studied the progression of the disease for as long as 15 years in individuals, and he came to the conclusion that the tonsillar region was particularly vulnerable. The mucous surfaces of a child were probably more susceptible than those of an adult. Age provides protection.

Professor TENDELOO (Leyden) sent a paper which was now read. He urged that inherited bacilli might remain dormant for years, but this did not mean that they had no influence on the final result. Primary infection of the lungs was more frequent than that of the intestines, and therefore the spread of the disease was generally due to contagion from man to man, but this did not justify the neglect of other means of infection.

Professor SIMS WOODHEAD, in reply, suggested that latency was not necessary for the argument, seeing how great are the facilities for infection. He did not wish to minimise the danger of food, but that of inhalation was greater. In this country, however, we had more intestinal infection than in China and most other countries of the world. There was much infected material about and we had to see that it was removed from circulation. He agreed with Dr. Ritchie that the aspiration effort might be an important factor to be considered. An undamaged skin resists the passage of infection; if we applied this fact to our consideration of the lining of the intestines we would see why in some cases a very small dose might suffice to spread the disease. As practical sanitarians we had enough information to know what to do, and this included the protection of the alimentary canal.

At the conclusion of the morning sitting all the visitors and many others were entertained to luncheon in the beautiful hall of the Royal College of Physicians of Edinburgh. The President of the College presided and proposed the usual loyal toasts, "The National Association for the Prevention of Tuberculosis," and "The Guests." Lord Balfour of Burleigh, Dr. C. Theodore Williams, and Dr. Hermann M. Biggs responded. The speeches, in so far as they dealt with the main issue before the Conference, were, as the President of the Royal College of Physicians pointed out, to the effect that to-day science has recognised the solidarity of human interests and the consequent necessity of united human endeavour. But there was not time for many or lengthy speeches as the Conference resumed its sitting at 3 in the afternoon.

Preventive Measures and the Administrative Control of Tuberculosis

was the subject set down to be discussed in the afternoon, but it cannot be said that this question was discussed at all. No criticisms were made, no speeches were delivered arising out of papers, but only a long series of papers was read.

The subject was opened by Dr. HERMANN M. BIGGS of New York, who related that during the last 20 years the law courts had never reversed a decision of the Department of Health of New York, now in charge of a population of 4,760,000. In 1881 they began by registering houses in which tuberculous deaths had taken place, and in 1897 compulsory notification was adopted. There was a squad of sanitary police, and they had to face exceptional difficulties. Nowhere in the world was there so dense a population, numbering from 600 to 1000 per acre. In many districts not a word of English could be heard, for there were a million and a half foreigners in New York. Last year 42,000 cases of tuberculosis were notified, of which 28,000 were new cases. Sputum examination was first adopted in 1894, in which year 500 specimens were received. Now the municipal laboratories receive annually about 36,000 specimens. There were 30 tuberculosis cliniques in the city, 16 of them being established by the municipality. Each has a different district assigned. There were medical inspectors and 170 trained nurses engaged in work in the tenement houses. Day camps had been established, and patients who worked during the daytime went to the camp at night, and out-of-door schools were maintained for tuberculous children, and an institution was maintained for children of tuberculous families who might become tuberculous if left in their ordinary surroundings. Patients who were dirty, or who would not, or could not, follow the instructions given them, were forcibly removed to hospitals. The subsidised accommodation for advanced cases was being increased from 2700 to 4500 beds, and a municipal sanatorium was now being erected for 1000 patients. These figures suffice to show that the existing accommodation is altogether insufficient. The best part of this paper was that describing the widespread measures taken for the spread of knowledge by the establishment of museums, the holding of lantern lectures, and the distribution of literature in regard to the dangers of infection.

Dr. LESLIE MACKENZIE, of the Scottish Local Government Board, next read a paper upon the Administrative Control of Pulmonary Phthisis in Scotland. (This will be found upon p. 162 of this issue of THE LANCET.)

The Prevention of Tuberculosis in Ireland.

Mr. T. J. STAFFORD, Medical Commissioner of the Local Government Board for Ireland, followed with a description of the system of notification enforced in Ireland. Individual liberty was only interfered with, he said, when the patient had a dangerous discharge and slept or worked in a room with others not so suffering, or when he handled or distributed milk or other food to other persons. The speaker quoted Hansard to show how much opposition there had been to this law and said that legislation could not go faster than the education of the public. Care, he thought, ought to be taken not to discourage voluntary effort. Public departments had to be rigid, and in Ireland they were so poor that their administrative action fell behind that of England or Scotland. But the speaker described in glowing terms the work done by the Irish Women's Health Association. Even if we were wrong in regard to our attitude as to the prevention of tuberculosis, he said, we should still have done much to reduce the general death-rate. Thus in Ireland since 1870 some £8,000,000 had been advanced on easy terms to build workmen's dwellings, and there were free grants made in rural districts. This meant from 50,000 to 60,000 new and better cottages for the people. Yet, and in spite of this, before the direct campaign was organised against tuberculosis there was no reduction in this disease. Nevertheless, proper housing was most essential from the general point of view.

Dr. E. W. HOPE, medical officer of health of Liverpool, next read a paper on the Preventive Measures against Tuberculosis adopted in his city (see p. 164).

The Housing Question at Edinburgh.

Dr. A. MAXWELL WILLIAMSON, medical officer of health of Edinburgh, next read a paper in which he pointed out the necessity of selecting sympathetic officers who did not apply cast-iron methods. The victims of tuberculosis were frequently poor people, and in Edinburgh 93 per cent. of the cases lived in tenements of four or fewer rooms; 60 per cent. of the cases lived in one- or two-roomed tenements. The poor suffered out of all proportion, and methods neglecting the housing question were sure to fail. Families cannot in safety live in one or two rooms, especially if they are damp or badly lighted. Such places must be ruthlessly closed. They had closed recently 340 such houses in Edinburgh. Then the poor so frequently removed from house to house that they infected many dwellings. Therefore notification of tuberculosis must, he considered, be obligatory and followed by disinfection after each removal of a patient. Last year 560 houses were so disinfected in Edinburgh. The local authorities must provide hospitals for isolation; one-fifth of the deaths occurred in the Edinburgh hospitals. They needed more accommodation.

Dr. H. SCURFIELD, medical officer of health of Sheffield, read a paper on the Administrative Control of Tuberculosis in Sheffield (see p. 166).

Sisterhoods and Tuberculosis.

Professor ADAMI gave a short account of the propagandist work done in Canada and the number of societies that existed for that purpose. The difficulty was with the indigent and incurable. He was thankful to say they had no workhouses in Canada, but the Government, especially of Ontario, give liberal subsidies to hospitals and sanatoriums. He also spoke of the great help given in nursing the poor by the Roman Catholic Sisterhoods. While it cost a municipality a dollar a day to isolate a patient, the sisters were able to do it for $10 a month, and he wondered how they managed. He hoped that Protestant ladies, who were sometimes apt to become hysterical as a result of idle ease, would devote their energies to the forming of sisterhoods, not religious sisterhoods, but organisations to relieve the bitter lot of the sick-poor.

The afternoon sitting, which had been prolonged to a late hour, was now brought to an end after Dr. A. K. CHALMERS, medical officer of health of Glasgow, had read a paper on Palmonary Tuberculosis as a Problem of Public Health (see p. 167).

(To be continued.)

THE TITLE OF DOCTOR IN MANY TONGUES.

THE following compilation will be found, we have no doubt, of service to many of our readers who may have experienced the difficulty in finding out what are the titles for "Doctor" and "Surgeon" in languages used in different parts of the world. It is not always possible to find these titles in guide-books, and at any moment visitors and travellers may find that the one word essential for them to know without delay is "Doctor" or "Surgeon." It will also be found of use in connexion with the work of the increasing number of international medical congresses which now take place where delegates come from all parts of the world, whose titles are somewhat of a mystery to other members of the congress. The titles of the medical men written in the Hungarian language and used at the latest International Medical Congress in 1909 must have been puzzling to not a few unacquainted with that language. We own ourselves to have been often at a loss for an accurate translation. Besides these uses and the philological aspect, other interests will be obvious to those engaged in literary pursuits or whose reading is in several languages.

THE SYNONYMS FOR "DOCTOR" AND "SURGEON" IN VARIOUS LANGUAGES.

English.—Doctor, Physician. Surgeon. (*Old:* Doctor of Phisik. Leech.)

Anglo-Saxon.—Læce.

Welsh.—Meddyg, Physigwr. Llawfeddyg.

Irish.—Fear Leigh.

Gaelic.—Leigh.

Manx.—Ferlhee.

Cornish.—Medhec, Medhek, Methec, Vethek, Methik, Medhik.

French.—Docteur, Médecin, Docteur en médecine, Docteur-Médecin, Médecin-chirurgien (*general practitioner*), Chirurgien. Aide-chirurgien (*assistant-surgeon*), Chirurgien en chef (*head surgeon*). (*Old:* Mege, Medze (Meggier—*appliquer des remèdes à un malade*), Physicien, Cirurgien).

Italian.—Dottore, Medico. Chirurgo. (*Also:* Medicatóre, Medicánte. Medichézza, *a female physician.*) Medico di marina (*navy surgeon*). Medico militare (*army surgeon*).

Spanish.—Doctor, Médico. Cirujano. Médico de buque (*ship surgeon*). Médico militar (*army surgeon*). (*Old:* Mege Menge, *Doctor of Medicine.*)

Portuguese.—Doutor, Physico, Medico. Cirurgião. (*Old:* Mege.)

Basque.—Dótora, Medikûa.

Breton.—Den Gwizick.

Provençal.—Douctour. Cirurgien.

Romansch.—Miedi. Docter de la Medicina.

German.—Doctor der Medizin, Physikus, Physiker, Medicus. Arzt, Wundarzt, Chirurgus *or* Chirurg. Oberarzt (*chief medical officer*). Hof-arzt (*physician to the Court*). Chefarzt (*Head Physician*). Schiffsarzt (*ship surgeon*). Bezirksarzt (*district medical officer*). Sanitätsrat (*Sanitary Councillor—a title of honour*).

Dutch.—Dokter, Geneesheer. Arts. Heelkundige, Heelmeester. Wondheeler.

Hungarian.—Doktor, Tudor. Orvos. Sebész (*surgeon*). Bányakerületi föorvos (*mining district chief medical officer*). Ezredorvos (*regimental surgeon*). Föorvos (*chief medical officer*). Fürdöorvos (*bath-physician—at a watering-place*). Gyermekkórházi orvos (*children's doctor*). Hajóorvos (*marine surgeon*). Járási tiszti orvos (*district medical officer*). Katonaorvos (*military surgeon*). Kerületi orvos (*district medical officer*). Kórházi orvos (*hospital surgeon*). Községi orvos (*parish doctor*). Központi tiszti orvos (*central district medical officer*). Mütöorvos (*operating surgeon*). Rendörs orvos (*police surgeon*). Tiszti föorvos (*district chief medical officer*). Törzsorvos (*staff*

surgeon). Udvari orvos (*Court physician*). Városi tiszti főorvos (*urban district chief medical officer*).

(N.B.—*List extended on account of International Congress at Budapest in 1909.*)

Illyrican (*Dalmatia, &c.*).—Lecnik. Vracitelj. Vidar. Ranarnik. Ranar.

Bohemian.—Lékar. Fysik. Hojic. Ranhojic. Ranlék. Chirurg.

Gothic.—Leikeis.

Dano-Norwegian.—Doktor. Læge. Kirurg. Feltskiœr (*army-surgeon*).

Swedish.—Doktor. Läkare. Kirurg. Fältskär (*army-surgeon*).

Icelandic.—Læknir.

Eskimo.—Angekok (*sorcerer or diviner*).

Russian.—Doktor. Medik. Vratch *or* Vrach. Lekar. Chirurg. Korabelnye Vrach (*marine surgeon*). Voennye Vrach (*military surgeon*). Lekarka (*lady doctor*).

Lettish or *Livonian* (Kurland and Livonia, Russia).—Ahrste. Mahzitais (*doctor or learned man*).

Greek.—Iatros. Cheirourgos. Klinikos. Therapeutes. Akestes (*healer*).

Latin.—Medicus. Physicus. Doctor in Medicinis. Medicinæ Doctor. Chirurgus. Vulnerum Medicus.

Hebrew.—Rōphé.

Polish.—Doktor. Medyk. Medrzec. Lekarz. Chirurg. Cyrulik.

Roumanian.—Doktor.

Turkish.—Hakim. Hakim-Baschi (*chief physician*). Hakim-Eféndi (*first physician-in-ordinary*). Jarrah (*surgeon*).

Maltese.—Tabib (*doctor*). Cerugiku (*surgeon*).

Armenian.—Pejichq.

Arabic.—Hakim. Tabib. Jarrah.

Egyptian.—Hakim.

Hindustani.—Hakim. Tabib. Baid. Jarráh (*surgeon*). Fassád. (*Also* "*Doctor Sahib.*")

Sanscrit.—Bhishak. Vaidya. Ayurveda (*science of life or general medicine*). Salya (*surgery*).

Persian.—Tabib. Hakim. Jarrah.

Chinese.—Ishang *or* I shêng.

Japanese.—Isha (*physician; doctor*). Guni (*military or naval surgeon*). Rikugun guni (*military surgeon*). Gekwai (*surgeon*). Gekwa (*surgery*). Funa-isha (*marine surgeon*). Isha ni kakaru (*to consult a physician*). Gun-i-sōkan (*surgeon-general*). Gun-i-kan (*deputy surgeon-general*). Kosan-gun-i (*senior military medical officer*). Byo-in (*hospital*). Byo (*disease*).

Cambodgian.—Krupet.

Annamite.—Thày. Thuôc.

Burmese.—Sétbarna Thakin ("*Medicine Lord*").

Tamil.—Pariyāri.

Malay.—Dūkun. Tuan Doktur.

Tibetan.[1]—Sman-pa (1. *Medicine.* 2. *Physician*). 'am-chi, 'am-ci, 'em-chi, em-ci (*a word of Turkish origin, meaning* "*physician*"), gso-ba-po (*physician*). (*Note.*—gso *pronounced* so.) *Also* Gso-byed, Gso-rig-byed, Gso-rig-hdzin-pa, Tshehi-rig-byed *and other words.*

Swahili (*Zanzibar, &c.*).—Mganga, Tabibu. Wachawis *or* Waganga—*wizards and witch doctors—the medicine-men of Zanzibar.*

Masai (*Brit. East Africa*).—Laibon *or* Ol-oiboni (*medicine-men*).

Akikúyu.—(People of Kikúyu, Brit. E. Africa.) Mún-du Mú-gu ("*A clever man*").

Haussa.—(Haussa States, Sokoto, W. Africa.) Maimágani.

North American Indian.—Powwow.

Esperanto.—Doktoro. Fizikisto. Kuracisto. Medicinisto. Hirurgiisto (*surgeon*). (*Note.* — *pronounced* Ch(*guttural*)eeroorghee-eestoh.)

Volapük.—("World Speech.") Dokel. Medinel. (*Note.*—A universal language invented by Johann Maria Schleyer, a German priest. 500,000 persons were said to be using it in 1888.)

"QUACK" IN VARIOUS LANGUAGES.

Some of the names of "quack" in various languages have been appended. The inquiries made in the course of the compilation would indicate that the word "charlatan" is a sort of international term for a quack.

Basque.—Chirchila.

Danish-Norwegian.—Kvaksalver.

Dutch.—Kwakzalver. Knoeier (*bungler*). Snoever (*boaster*). Bedrog (*charlatanry, cheating*). Kwakzalverij.

English.—Quack. Charlatan. Mountebank. Saltimbanco. Medicaster. Sawbones. Bone-setter.

Esperanto.—Ĉarlatano.

French.—Charlatan. Empirique. Saltimbanque. Médicastre. Hâbleur. Médecin d'eau douce (*water-gruel doctor*). Médecin—charlatan. Renoueur; Rebouteur (*bone-setters*). (*Old:* Marchand ou vendeur d'Orviétan.) (N.B.—Orviétan was an electuary invented by Ferranto of Orvieto in Italy.) Boniment. Hâblerie ou Hâblerie artificieuse (Annonce pompeuse de Charlatan) (*Harangue*).

German.—Kur-pfuscher. Quacksalber. Salbader. Marktschreier (*market-bawler*).

Greek.—Agyrtes. Alazōn (*vagabond*). Kompsologos iatros ("*fine-speaking*" *physician*).

Hindustani.—Nim-hakim (*half-doctor*). Bázárú Hakim (*common, bad, doctor*). Thag-baid (*swindling doctor*). Fareb (*charlatanry, deceit*).

Hungarian.—Kuruzsló. Sarlatán. Kuruzslónő (*female quack*). Szédelgő (*swindler*).

Italian.—Ciarlatano. Medicastro. Medico d'acqua cotta (*cooked water doctor*). Cantambanco. Furbo (*cheat*).

Japanese.—Yabuisha.

Latin.—Circulator. Medicus circumforaneus. Agyrta.

Portuguese.—Charlatão. Empirico. Saltimbanco.

Provençal.—Charcutiaire (*flesh mangler*).

Romansch.—Scharlatan.

Russian.—Sharlatan. Ploshtchadnoi Doktor (*market-doctor*). Plochoi Medik (*paltry doctor or medicaster*).

Spanish.—Charlatán. Curandéro. Empirico. Matasános.

Swedish.—Qvacksalfvare. Dalig Läkare (*paltry doctor*).

Turkish.—Lāfazan.

Welsh.—Crachfeddyg. Twyllwr (*cheater*).

[1] The authors are indebted to Mr. F. W. Thomas, Reader in the Tibetan Language at University College, London, for the ample explanation of the Tibetan words, and to Professor L. D. Barnett, Professor of Sanskrit, for the two Sanskrit words for "Doctor."

ASYLUM REPORTS.

Annual Report of the Warneford Hospital for Mental Diseases for the Year 1909.—There were 22 admissions to this hospital during the year. The average number daily resident on the registers was 99. The discharges numbered 17, of whom 10 were men and 7 were women. Of the discharges 8 persons were recovered, this being a proportion of 36·5 per cent. on the admissions. Six persons died during the year and among them was a patient who entered the hospital in the year 1843 and who was within a few weeks of her 100th year.

Annual Report of the St. Andrew's Hospital for Mental Diseases at Northampton for the Year 1909.—To this hospital 87 patients were admitted during the year and the average number resident was 421. Fifty-seven patients were discharged, and of these 33 were discharged recovered, the percentage of recoveries to the total number of admissions being 37·93. The number of deaths was 27, the percentage of deaths to the average number resident being 6·41.

Annual Report of the Kent County Lunatic Asylum, Barming Heath, Maidstone, for the Year 1909.—There were admitted to this asylum during the year 423 patients. It is interesting to note that in as many as 52 per cent. of the admissions hereditary predisposition was ascertained. The average daily number on the registers was 1601. Discharges numbered 195, and of these 37·1 per cent. of the total admissions and 40 per cent. of the direct admissions recovered. In 69·4 per cent. of the recoveries the

disease was of less than a year's duration. Deaths numbered 234, and the death-rate was 16·4 per cent., the highest on record. The medical superintendent, Dr. H. Wolseley-Lewis, reports well of the conduct of his staff, and especially refers to Attendant J. Minifie, who on Dec. 18th saved a patient from drowning at the imminent risk of his own life. Dr. Wolseley-Lewis publishes a most interesting *résumé* of the statistics of the last five years, and makes therefrom several important deductions. We quote from the report *in extenso* :—

BARMING HEATH ASYLUM: RÉSUMÉ OF THE LAST FIVE YEARS.

As it is only by a consideration of what has occurred in the past, that it is possible to form an estimate of what is likely to happen in the future, I am placing before you this year some of the results of the working of the asylum for the past five years.

Movement of the Asylum Population (Jan. 1st, 1905, to Dec. 31st, 1909).

	Males.		Females.		Total.	
		Per ann.		Per ann.		Per ann.
Admitted	1012	(202·4)	1062	(212·4)	2074	(414·8)
Discharged ... ... (recovered)	334	(66·8)	428	(85·6)	762	(152·4)
	33·00%		40·31%		36·74%	
Discharged ... ... (not recovered)	87	(17·4)	104	(20·8)	191	(38·2)
Died	482	(96·4)	487	(97·4)	969	(193·8)
	13·77%		11·60%		12·63%	
Increase	109	(21·8)	43	(8·6)	152	(30·4)

N.B.—Percentage of recoveries is calculated on the number of admissions, and the percentage of deaths on the average number resident.

From a consideration of this Table may be deduced the following facts :—

1. *Admission rate.*—That there is a tendency for the number of female admissions to increase, and that the number of male admissions remains remarkably constant. The average number of admissions during the last 20 years is 407·3 (202·9 men and 204·4 women) per annum, as against 414·8 (202·4 men and 212·4 women) for the last five.

2. *Recovery rate.*—That the recovery rate of 36·74 corresponds very closely with 36·67 which is the average recovery rate for the last ten years in all the county and borough asylums in England and Wales: the rate for men being rather low (33 as against 33·38) and that for women rather high (40·31 as against 39·97).

3. *Discharged not recovered.*—That the number per annum of 38·2 (17·4 men and 20·8 women) is very small as compared with the number per annum for the last 20 years, which is 75·7 (33·7 men and 41·9 women). This comparison, however, is of little value, as large batches of patients were transferred from time to time to other asylums before the last quinquennial period. The numbers for the last five years may be taken as an average under normal conditions.

4. *Death-rate.*—That compared with the average death-rate for the last ten years in all county and borough asylums in England and Wales, which is 10·3 per cent. (11·62 men and 8·98 women) our death-rate for the last five years is very high, being 2·15 per cent. above the normal for men and 2·62 per cent. above it for women; and that compared with the average death-rate during the last 20 years at this asylum it is 0·9 below the average for men and 1·6 above the average for women. A study of the death-rate here for the last 20 years in quinquennial periods shows that the rate for men is very constant, but that the rate for women has increased very much during the last ten years, the percentage-rate for the last ten years being 11·6, and that for the first ten years only 8·4, giving the remarkable difference of 3·2 per cent. between the two decennial periods.

In considering the cause for this change in the death-rate, we find that during the last five years three diseases—tubercle, heart disease, and senile decay—account for 66·5 per cent. of all female deaths. Compare the death-rate from these diseases during the first ten years and the last five years of the twenty-year period and we find in the former tubercle 27·0 per cent., heart disease 18·8 per cent., senile decay *nil*; and in the latter tubercle 28·9 per cent., heart disease 22·3 per cent., senile decay 17·2 per cent. Observe how very little the death-rate from tubercle varies; it has always been higher at this asylum than at most other county asylums; it is a hereditary disease closely connected with insanity. We find that in the last period heart disease and senile decay account for an increase of 20·7 per cent., the incidence falling on the ever-increasing numbers of feeble old women. .....

5. *Rate of increase.*—That the rate of increase of 30·4 per annum (21·8 men and 8·6 women) is very satisfactory, as compared with the rate of increase in the last 20 years, which is 36·9 (21 men and 15·9 women). .....

6. *Heredity as a cause of insanity.*—We have at the present time in this asylum brothers, sisters, brother and sister, father and daughter, uncle and niece, aunt and niece, aunt and nephew, besides many cases of more distant relatives. .....

Out of a total of 1934 persons admitted during the last five years I have discovered evidence of insanity in the family, and often in many members, in 828 instances, or 42·7 per cent. An analysis of these 828 cases brings into prominence three well-recognised but very important facts :—

I. *That the disease makes its appearance early in life.*—Out of 410 male patients with a family history of insanity 53·3 per cent. were under 35 years of age when first attacked, and out of 418 female patients with insane relatives 60·6 per cent. were under that age when first attacked. Now, according to the Lunacy Commissioners' Report of all admissions into asylums, 37·1 per cent. of males and 36·3 per cent. of females were under 35 years of age on admission. The young people in asylums, then, are those that have the hereditary taint. They are either discharged or die.

II. *Should they be discharged they are prone to relapse.*—Out of our 410 males we find 93 who have been in asylums two or more times, in one case eight times, representing in all 271 admissions into this or other asylums; in the case of 418 women we find 115 relapsing cases representing 304 admissions, one of these women having been admitted eight times. Comparing these figures with our non-hereditary cases we find out of 524 males 81 recurrent cases representing 222 admissions, and out of 650 females 109 recurrent cases representing 271 admissions.

It is evident then that many of these young hereditary cases are discharged to their homes only to relapse again and again, in the meanwhile marrying and begetting children, the women often returning here several times after childbirth.

III. *Should they remain and die here they usually do so at a good old age.*—Of our 828 hereditary cases 141 have died, and of these 50 per cent. of the men and 61·5 per cent. of the women were over 55 years of age at death. Comparing this with the age incidence at death in asylums generally, as given in the Lunacy Commissioners' Report, of 41·8 per cent. for men and 50·2 per cent. for women over 55, it is difficult to avoid the conclusion that the regular routine life of an institution leads to longevity.

Dr. Wolseley-Lewis's general conclusion is that the population of the asylum is recruited from and maintained by persons who have inherited brain defects.

Annual Report of the Glasgow Royal Asylum for the Year 1909.—The average number resident at this asylum for the year was 442. 133 cases were admitted, 109 under certificates and 24 as voluntary patients. In a large proportion of both classes the illness had been of more than six months' duration when treatment was sought. The medical superintendent, Dr. L. R. Oswald, writes that alcohol was the principal factor in 16 cases, this being a percentage of 12 as compared with a percentage of 22 on the admissions into the district asylums of Glasgow. Dr. Oswald's experience is that alcohol is becoming less frequently a cause of insanity among men of the middle classes. "I fear, however, that in women of the same social class the alcoholic and drug habits are on the increase, and physicians in large general practice tell me that that is also their experience. The mental and moral deterioration produced in women by alcoholic and drug excess is extremely grave, and is deeper and more persistent than the corresponding condition in the male sex. It is to be greatly deplored that such drugs as morphia, sulphonal, and paraldehyde can be so easily obtained without medical prescription, for their administration over long periods brings about deleterious effects short of actual mental disorder." Discharges from this asylum numbered 95. 43 persons left as recovered, being 34 per cent. calculated on the number of admissions. Deaths numbered 36, being a percentage of 8·2 on the average number resident. One of the important events of the year has been the establishment of the Western Asylums Research Institute, its first director being Dr. I. M'Kenzie.

Annual Reports of the Surrey County Lunatic Asylums at Brookwood and Netherne for the Year 1909.—At Brookwood Asylum the average number resident was 1149. There were admitted 391 cases. 630 persons were discharged, but of these 475 were transferred to the new asylum at Netherne. 95 persons were discharged recovered, and this represents a proportion of 35·09 per cent. of the admissions. 118 patients died during the year, giving a death-rate of 10·27 on the daily average number resident. Post-mortem examinations were made in 75 per cent. The new asylum at Netherne was opened in April, 1909. To it there were admitted during the year 689 persons. There were 39 discharges, the recovery rate being 7·7 per cent. 24 deaths occurred and post-mortem examinations were held in 14 cases. The Commissioners in Lunacy, who have visited the asylum, appear to be favourably impressed by its arrangements, and, we are happy to note, make a suggestion that provision should be made for verandahs where the open-air treatment of cases of tuberculosis may be undertaken. We may hope that some day in the near future there may be suggested provision of suitable arrangements for the open-air treatment in bed of the various psychoses in which this therapeutic measure has proved so valuable.

Annual Report of the Bucks County Lunatic Asylum for the Year 1909.—The average daily number on the registers during the year was 632. The admissions numbered 157. There were discharged 108 persons and of these 54 were recovered, giving a recovery rate of 37·5 per cent. on the direct admissions. Deaths numbered 77, the rate being 12·2 per cent. of the average number resident. In as high a proportion as 97 per cent. of the deaths the cause was verified by post-mortem examination. The medical superintendent, Dr. H. Kerr, gives a table illustrating the growth of the numbers of the pauper insane in the county since 1870. This table shows that of an increase of 193 in the period of 40 years, the 10 years from 1895 to 1905 accounts for 138, and that while the total number of the insane has increased by 193 the numbers in the county asylum have increased by 253. There has been since 1890

a continuous increase in the numbers treated in the asylum as compared with those cared for in workhouses or with friends. This is largely accounted for by the four-shilling grant, which has had the effect of bringing a larger number of imbeciles under asylum care, and also a number of senile dements, who formerly would probably not have been certified.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ELECTION OF MEMBERS OF COUNCIL.

A MEETING of the Fellows of the College was held at the College in Lincoln's Inn Fields on July 7th for the purpose of electing four members of Council. The President, Mr. H. T. Butlin, presided. 865 Fellows voted; of these votes 856 were received by post and 9 Fellows voted personally. 3 voting papers were received too late and 5 voting papers were spoilt as they were incorrectly marked or attested.

The following was the result of the poll:—

	Votes.	Plumpers.
CHARLES BARRETT LOCKWOOD	532	 58
BILTON POLLARD	514	 38
JOHN BLAND-SUTTON	499	 63
CHARLES ALFRED BALLANCE	484	 19
JAMES ERNEST LANE	383	 35

The PRESIDENT declared Mr. Lockwood to be re-elected and Mr. Pollard, Mr. Bland-Sutton, and Mr. Ballance to be elected members of Council.

Mr. H. J. Price and Dr. R. H. Paramore acted as scrutineers.

Looking Back.

FROM

THE LANCET, *SATURDAY*, July 14th, 1832.

Use of the Ventricles.—Much dispute has arisen with regard to the use of the ventricles. Even in the healthy living animal they contain some portion of fluid. If the horse is destroyed and the cranium opened as speedily as possible, serum is found in the lateral ventricles. Some physiologists have contented themselves with observing that the ventricles are merely cavities left in certain parts of the brain where irregular surfaces are opposed to each other; others as plausibly have imagined that they are formed by the foldings of the convolutions of the brain—while some have supposed that they were intended to preserve that full and perfect occupation of the cranial cavity which seems to be necessary to the safety of the brain in the natural motions of the animal. If a portion should be diseased and absorbed, the plexus choroides or the membrane of the ventricles may secrete a proportionate quantity of fluid: to which we may add these spaces left in the centre of the brain or filled only with fluid, are adapted to neutralise any concussion to which the brain may be exposed.[1]

[1] Excerpt from "Lectures on Veterinary Medicine, delivered in the University of London, by Mr. Youatt. Lecture XXXVI. The Brains of Domesticated Animals."

COLONIAL MEDICAL SERVICES.—*West African Medical Staff.*—The following promotions have been announced: Dr. E. W. Graham, medical officer, Southern Nigeria, to be senior medical officer, Northern Nigeria; Dr. C. B. Hunter, medical officer, Sierra Leone, to be senior medical officer, Gold Coast; Mr. G. J. Rutherford, senior medical officer, Gold Coast, to be provincial medical officer for Ashanti; and Mr. E. H. Tweedy, senior medical officer, Gold Coast, to be provincial medical officer for the Northern Territories of the Gold Coast. Dr. J. W. S. Macfie and Dr. W. Morrison have been apppointed to the staff in Northern Nigeria. *Other Colonies and Protectorates.*—Mr. H. L. Duke and Dr. R. E. McConnell have been selected for temporary employment as medical officers in Uganda, and Dr. J. O. Shircore has been appointed a medical officer in Nyasaland.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 77 of the largest English towns 8344 births and 3579 deaths were registered during the week ending July 9th. The annual rate of mortality in these towns, which had been so low as 11·2 and 11·0 per 1000 in the two preceding weeks, did not again exceed 11·0 in the week under notice. During the 13 weeks of last quarter the annual death-rate in these towns averaged only 12·7 per 1000, and was 1·6 below the mean rate in these towns in the four preceding corresponding quarters. In London during the same period the death-rate, calculated on the estimated population, did not exceed 12·2 per 1000. The lowest reported annual rates of mortality during last week in these 77 towns were 3·2 in Hornsey, 5·7 in Willesden, and 5·9 in Newport (Mon.); the rates in the rest of the 77 towns ranged upwards to 17·7 in Oldham, 18·3 in Dewsbury, 18·9 in Stockport, and 20·6 in Swansea. In London the reported death-rate last week was only 10·7 per 1000. The 3579 deaths registered last week in the 77 towns were 9 below the low number in the previous week, and included 358 which were referred to the principal epidemic diseases, against 353 and 336 in the two preceding weeks; of these 358 deaths, 115 resulted from measles, 109 from whooping-cough, 71 from diarrhœa, 28 from scarlet fever, 28 from diphtheria, and 7 from enteric fever, but not one from small-pox. The mean annual rate of mortality from these epidemic diseases in the 77 towns last week was equal to 1·1 per 1000, against 1·1 and 1·0 in the two preceding weeks. No death from any of these epidemic diseases was registered last week in East Ham, Brighton, Leyton, Southampton, or in 11 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·9 in Oldham, 3·1 in Manchester, 3·8 in Burton-on-Trent, and 3·9 in Merthyr Tydfil. The fatal cases of measles in the 77 towns, which had been 94 and 113 in the two previous weeks, further rose to 115 last week; and caused the highest annual rates, 1·3 and 1·6, in Sunderland and Barrow-in-Furness. The 109 deaths from whooping-cough showed a further slight decline from the numbers in recent weeks, but caused rates equal to 1·3 in South Shields, 1·4 in Oldham, and 1·6 in Tottenham and in Gateshead. The deaths attributed to diarrhœa, which had been 75, 70, and 55 in the three preceding weeks, rose again to 71 last week; the highest death-rates from this cause were 1·5 in Burnley and 3·3 in Merthyr Tydfil. The 28 fatal cases of scarlet fever exceeded the numbers in recent weeks, and included 9 in London and its suburban districts, 3 in Liverpool, and 2 both in Manchester and in Stoke-on-Trent. The 28 deaths from diphtheria also showed an increase; 7 occurred in London and its suburban districts, 3 in Burton-on-Trent, and 2 each in Huddersfield, Halifax, and Bradford. The 7 deaths referred to enteric fever, which included 2 in London and 2 in Smethwick, were fewer than in any previous week of this year. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been 1353 and 1378 on the two preceding Saturdays, had further increased to 1439 at the end of last week; 188 new cases of this disease were admitted to these hospitals during last week, against 187 and 183 in the two preceding weeks. The Metropolitan Asylums contained 3 small-pox patients on Saturday last, of whom 2 were admitted during the week. Of the 997 deaths registered in London during last week 117 were referred to pneumonia and other diseases of the respiratory system, and were 12 below the corrected average number in the corresponding week of the five years 1905–09. The causes of 25, or 0·7 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week were duly certified in Leeds, Sheffield, Bristol, West Ham, Newcastle-on-Tyne, Hull, Leicester, Nottingham, and in 52 other smaller towns; the 25 uncertified causes of death in the 77 towns last week included 4 in Liverpool, 3 in Norwich, and 2 each Birmingham, Sunderland, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 864 births and 439 deaths were registered during the week ending July 9th.

The annual rate of mortality in these towns, which had declined in the five preceding weeks from 14·3 to 13·2 per 1000, further declined to 12·1 in the week under notice. During the 13 weeks of last quarter the death-rate in these towns averaged 15·4 per 1000, and exceeded by 2·7 the mean rate during the same period in the 77 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 6·1 and 7·9 in Paisley and Aberdeen to 15·6 in Greenock and 18·2 in Perth. The 439 deaths from all causes in the eight towns during last week showed a further decline of 38 from the numbers in recent weeks, and included 44 which were referred to the principal epidemic diseases, against 61 and 48 in the two preceding weeks; of these 44 deaths, 19 resulted from diarrhœa, 9 from diphtheria, 8 from measles, 4 from scarlet fever, and 2 each from whooping-cough and "fever," but not one from small-pox. The mean annual rate of mortality from these epidemic diseases in the eight towns last week was equal to 1·2 per 1000, against 1·1 in the 77 English towns; the highest rates from these diseases in the Scotch towns last week were 2·1 in Greenock and 2·8 in Dundee. The 19 deaths attributed to diarrhœa in the eight towns last week exceeded by 2 the number returned in each of the two preceding weeks, and included 11 in Glasgow, 3 in Dundee, and 2 in Edinburgh and in Aberdeen. The 9 fatal cases of diphtheria also showed an increase upon the numbers in recent weeks; 4 occurred in Glasgow and 3 in Dundee. The 8 deaths from measles were fewer than in any recent week, but included 4 in Glasgow and 3 in Dundee. The 4 fatal cases of scarlet fever corresponded with the number in the previous week, while the deaths from whooping-cough, which had been 11 and 12 in the two preceding weeks, declined to 2 last week, both of which were returned in Glasgow. Of the 2 deaths referred to "fever" one each occurred in Glasgow and in Greenock. The deaths referred to diseases of the respiratory system in the eight towns, which had been 61 and 55 in the two preceding weeks, rose to 66 last week, and exceeded by 5 the number in the corresponding week of last year. The causes of 10, or 2·3 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 627 births and 376 deaths were registered during the week ending July 9th. The mean annual rate of mortality in these towns, which had been equal to 18·9, 17·9, and 16·1 per 1000 in the three preceding weeks, rose again to 17·0 in the week under notice. During the 13 weeks of last quarter the annual death-rate in these Irish towns averaged 20·1 per 1000, whereas the mean rate during the same period did not exceed 12·7 in the 77 largest English towns and 15·4 in the eight principal Scotch towns. The annual death-rate during last week was equal to 16·8 in Dublin, 19·3 in Belfast, 13·0 in Cork, 20·4 in Londonderry, 10·9 in Limerick, and 15·6 in Waterford; the mean annual death-rate last week in the 16 smallest of these Irish towns was equal to 15·2 per 1000. The 376 deaths from all causes in the 22 town districts last week showed an increase of 21 upon the number in the previous week, and included 46 which were referred to the principal epidemic diseases, against 68, 50, and 39 in the three preceding weeks; these 46 deaths in the Irish towns were equal to a mean annual rate of 2·1 per 1000, and in Belfast it was equal to 4·1; in the 77 English towns the mean rate last week from the same diseases did not exceed 1·1, and in the eight Scotch towns it was 1·2. The 46 deaths from these epidemic diseases in the Irish towns last week included 26 from measles, 14 from diarrhœa, 3 from diphtheria, 2 from whooping-cough, and 1 from enteric fever, but not one either from scarlet fever or small-pox. The 26 fatal cases of measles in the 22 towns corresponded with the number in the previous week, and included 24 in Belfast. The deaths attributed to diarrhœa, which had been but 3 in the previous week, rose to 14 last week, of which 6 occurred in Dublin and 5 in Belfast. Two of the 3 deaths from diphtheria were returned in Dublin, and both the fatal cases of whooping-cough occurred in Belfast. The death from enteric fever was registered in Cork. The deaths in the 22 towns referred to pneumonia and to other diseases of the respiratory system, which had been 72 and 43 in the two preceding weeks, rose again to 61 last week. The causes of 19, or 5·1 per cent., of the deaths registered in the Irish towns last week were not certified; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent., and in the eight principal Scotch towns it was equal to 2·3 per cent.

VITAL STATISTICS OF LONDON DURING JUNE, 1910.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 4·0 per 1000 of the population, estimated at 4,872,702 persons in the middle of the year. In the three preceding months the rates were 4·1, 4·2, and 3·9 per 1000 respectively. The lowest rates last month were recorded in Paddington, Kensington, Fulham, Chelsea, Hampstead, and the City of London; and the highest rates in Hammersmith, St. Pancras, Bethnal Green, Poplar, Bermondsey, Battersea, and Woolwich. Two cases of small-pox were notified during the month, one from the City of Westminster and one from Shoreditch. The prevalence of scarlet fever showed but little variation from that recorded in the preceding month; among the several metropolitan boroughs this disease was proportionally most prevalent in Hammersmith, Bethnal Green, Poplar, Bermondsey, Battersea, Lewisham, and Woolwich. The Metropolitan Asylums Hospitals contained 1358 scarlet fever patients at the end of June, against 1584, 1489, and 1422 at the end of the three preceding months; the weekly admissions averaged 180, against 180, 183, and 177 in the three preceding months. Diphtheria was slightly more prevalent than it had been in the previous month; this disease was proportionally most prevalent in Stepney, Southwark, Bermondsey, Battersea, Deptford, Greenwich, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 852, 794, and 734 at the end of the three preceding months, had further declined to 673 at the end of last month; the weekly admissions averaged 80, against 82, 75, and 73 in the three preceding months. The prevalence of enteric fever showed a considerable increase as compared with that in the two preceding months; the greatest proportional prevalence of this disease was recorded in Kensington, the City of Westminster, St. Pancras, and Islington. There were 46 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 84, 66, and 60 at the end of the three preceding months; the weekly admissions averaged 8, against 6 and 8 in the two preceding months. Erysipelas was proportionally most prevalent last month in St. Pancras, Holborn, Finsbury, Shoreditch, Bethnal Green, Deptford, and Greenwich. The 25 cases of puerperal fever notified last month included 4 in Wandsworth, 3 in the City of Westminster, and 2 each in Hammersmith, Fulham, Islington, Stepney, Southwark, and Lambeth. The 11 cases notified as cerebro-spinal meningitis included 4 in Islington, 2 in Bermondsey, and 1 each in Paddington, the City of Westminster, Stepney, Poplar, and Lambeth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates are further corrected for variations in the sex and age constitution of the population of the several boroughs. During the five weeks ending July 2nd the deaths of 4705 London residents were registered, equal to a corrected annual death-rate of 10·6 per 1000; in the three preceding months the rates were 13·9, 14·0, and 12·4 per 1000. The lowest death-rates last month were 7·8 in Hampstead and in Lewisham, 8·0 in Fulham, 8·8 in Battersea and in Wandsworth, and 9·0 in Deptford; the highest rates were 12·9 in Bethnal Green, 13·3 in Shoreditch, 13·8 in Southwark, 14·0 in Finsbury, 14·1 in Holborn and in the City of London, and 16·1 in Bermondsey. The 4705 deaths

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1910.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1910.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.		
LONDON...	4,872,702	2	972	445	2	73	2	25	320	11	1852	4·0	—	210	19	22	128	—	8	1	74	462	1·0	4705	10·6
West Districts.																									
Paddington	153,004	—	22	7	—	2	—	—	7	1	39	2·7	—	4	1	—	4	—	1	—	—	10	0·7	136	9·9
Kensington	184,635	—	18	9	—	5	—	—	10	—	42	2·4	—	4	—	—	1	—	—	—	2	7	0·4	174	10·6
Hammersmith	127,413	—	38	12	—	1	—	2	8	—	61	5·0	—	2	2	1	4	—	1	—	4	14	1·1	118	10·1
Fulham	181,282	—	23	12	—	2	1	2	6	—	46	2·6	—	9	—	—	2	—	—	—	—	11	0·6	132	8·0
Chelsea	75,457	—	5	5	—	—	—	—	3	—	13	1·8	—	—	—	—	5	—	—	—	1	6	0·8	82	11·7
City of Westminster	167,233	1	22	12	—	6	—	3	6	1	51	3·2	—	3	1	1	3	—	—	—	4	12	0·7	164	11·4
North Districts.																									
St. Marylebone	125,196	—	21	17	1	1	—	—	6	—	46	3·8	—	3	—	—	—	—	1	—	2	6	0·5	121	10·8
Hampstead	95,729	—	16	2	—	2	—	—	3	—	23	2·5	—	—	1	—	2	—	—	—	1	4	0·4	63	7·8
St. Pancras	237,792	—	62	25	—	8	—	—	24	—	119	5·2	—	10	1	2	12	—	—	—	1	26	1·1	272	12·4
Islington	353,356	—	61	28	—	9	—	2	22	4	126	3·7	—	5	—	—	10	—	1	—	6	22	0·6	329	10·1
Stoke Newington	54,838	—	11	1	—	—	—	1	3	—	16	3·0	—	1	—	1	—	—	—	—	1	3	0·6	61	12·1
Hackney	239,979	—	32	16	—	—	—	1	19	—	68	3·0	—	19	—	—	4	—	—	—	4	27	1·2	210	9·5
Central Districts.																									
Holborn	53,142	—	9	4	—	1	—	—	6	—	20	3·9	—	—	—	—	—	—	1	—	—	1	0·2	67	14·1
Finsbury	94,578	—	14	9	—	1	—	—	14	—	38	4·2	—	4	1	1	6	—	1	—	4	17	1·9	122	14·0
City of London	17,132	—	1	—	—	1	—	—	1	—	3	1·8	—	—	1	—	—	—	—	—	1	2	1·2	21	14·1
East Districts.																									
Shoreditch	114,387	1	24	10	—	2	—	—	10	—	47	4·3	—	8	—	—	5	—	—	—	2	15	1·4	139	13·3
Bethnal Green	131,579	—	38	15	—	1	—	—	21	—	75	5·9	—	11	3	2	2	—	—	—	5	23	1·8	162	12·9
Stepney	314,379	—	71	43	—	6	—	2	26	1	149	4·9	—	12	2	2	9	—	—	—	8	33	1·1	297	10·3
Poplar	172,432	—	51	19	1	3	—	1	14	1	90	5·4	—	6	—	2	3	—	—	—	2	13	0·8	168	10·5
South Districts.																									
Southwark	211,832	—	24	27	—	2	—	2	17	—	72	3·5	—	35	—	1	10	—	—	—	6	52	2·6	268	13·8
Bermondsey	127,238	—	41	17	—	1	—	1	8	2	70	5·7	—	14	3	2	4	—	—	—	6	29	2·4	191	16·1
Lambeth	327,074	—	83	13	—	6	—	2	12	1	117	3·7	—	15	—	1	3	—	—	—	4	23	0·7	283	9·3
Battersea...	188,222	—	50	26	—	3	—	—	12	—	91	5·0	—	3	—	—	11	—	1	—	—	15	0·8	148	8·8
Wandsworth	305,838	—	72	28	—	3	—	4	11	—	118	4·0	—	4	—	—	6	—	—	—	5	15	0·5	243	8·8
Camberwell	286,058	—	33	23	—	5	1	1	17	—	80	2·9	—	18	2	1	9	—	1	—	4	35	1·3	289	10·9
Deptford	119,642	—	29	13	—	2	—	—	12	—	56	4·9	—	5	—	2	2	—	—	—	—	9	0·8	99	9·0
Greenwich	112,935	—	13	17	—	—	—	—	11	—	41	3·8	—	4	1	1	4	—	—	—	—	10	0·9	104	9·8
Lewisham	164,899	—	50	14	—	—	—	—	3	—	67	4·2	—	3	—	1	4	—	—	—	1	9	0·6	119	7·8
Woolwich...	135,422	—	38	21	—	—	—	1	8	—	68	5·2	—	8	—	1	3	—	—	1	—	13	1·0	123	10·2
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

† The death-rates are corrected for variations in sex- and age-constit ution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

from all causes included 462 which were referred to the principal infectious diseases; of these, 210 resulted from measles, 19 from scarlet fever, 22 from diphtheria, 128 from whooping-cough, 8 from enteric fever, 1 from ill-defined pyrexia, and 74 from diarrhœa, but not any from small-pox or from typhus. The lowest death-rates from these infectious diseases last month were recorded in Kensington, St. Marylebone, Hampstead, Holborn, and Wandsworth; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Camberwell. The 210 deaths from measles were 19 fewer than the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Hackney, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The 19 fatal cases of scarlet fever showed a decline of 30 from the corrected average number; of these 19 deaths, 3 belonged to Bethnal Green, 3 to Bermondsey, and 2 each to Hammersmith, Stepney, and Camberwell. The 22 deaths from diphtheria were 20 below the corrected average number, and included 2 each in St. Pancras, Bethnal Green, Stepney, Poplar, Bermondsey, and Deptford. The 128 fatal cases of whooping-cough were slightly fewer than the corrected average number; among the several metropolitan boroughs this disease showed the greatest proportional mortality in Chelsea, St. Pancras, Finsbury, Shoreditch, Southwark, and Battersea. The 9 deaths referred to "fever" were 5 below the corrected average, and belonged respectively to Paddington, Hammersmith, St. Marylebone, Islington, Holborn, Finsbury, Battersea, Camberwell, and Woolwich. The 74 fatal cases of diarrhœa were 15 below the corrected average; this disease was proportionally most fatal in Hammersmith, Fulham, Bethnal Green, Stepney, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was nearly 18 per cent. below the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeons: J. H. Fergusson to the *President*, additional, for temporary service at the Admiralty Recruiting Department; and D. W. Hewitt to the *Hood*.

ARMY MEDICAL SERVICE.

Colonel Henry J. W. Barrow is placed on retired pay (dated July 7th, 1910).

Lieutenant-Colonel Thomas J. O'Donnell, D.S.O., from the Royal Army Medical Corps, to be Colonel, vice H. J. W. Barrow (dated July 7th, 1910).

ROYAL ARMY MEDICAL CORPS.

Colonel A. Peterkin, Principal Medical Officer of the London District, has been selected to act as Administrative Medical Officer of the Second (Aldershot) Division during the Army manœuvres. Colonel H. J. Waller Barrow, Principal Medical Officer of the Third (Lahore) Division, has arrived home from India. Lieutenant-Colonel W. E. Berryman has been transferred from Delhi to Fyzabad and appointed to command the Station Hospital. Lieutenant-Colonel T. W. O'H. Hamilton, C.M.G., Staff Officer to the Principal Medical Officer of the Aldershot Command, has notified his intention to retire from the service. Lieutenant-Colonel C. E. Nichol, D.S.O., has arrived home on leave from India. Major M. P. C. Holt, D.S.O., surgical specialist at Ambala, has been transferred to Kasauli. Major J. W. Jennings, D.S.O., from Warrington, has taken over medical charge of the troops in Trawsfynydd camp. Major W. A. Ward has been transferred from the London District to the Eastern Command, and appointed a specialist in Dermatology and Venereal Disease at the Alexandra Hospital, Cosham. Captain J. W. L. Scott and Captain E. D. Cadell have arrived home on leave from India. Captain F. J. Brakenridge, from the London District, has taken up duty at Dover. Captain H. M. Nicholls has been transferred from Deolali to Colaba. Captain V. C. Honeybourne, from Rawal Pindi, has been appointed to the Station Hospital at Mhow. Captain G. E. Ferguson, from Alexandria, has arrived at Cyprus for a tour of duty. Captain A. H. Bond has been transferred from Rangoon to Naini Tal. Captain E. G. Anthonisz has joined at Bangalore from Madras. Captain J. D. Richmond has been appointed for duty at Kilkenny from Fermoy. Captain H. Harding, from Portland, has been posted to Cosham. Captain T. S. Blackwell has left Secunderabad for a tour of duty in Burma and has been posted to Bhamo. Captain W. McConaghy has been posted to the Southern Command. Lieutenant A. P. Hart has been appointed a specialist in Dermatology and Venereal Disease to the Burma Division.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel W. D. Sutherland has been confirmed as a Civil Surgeon, first class, vice Lieutenant-Colonel J. L. Poynder, retired. Lieutenant-Colonel H. H. Hendley has been granted two and a half months' extension of his combined leave. Lieutenant-Colonel W. H. Quicke has arrived home on leave. Major A. Leventon has been placed on deputation to the commission to inquire into the labour conditions in the Indian Tea Gardens, being relieved as civil surgeon, Rampore, Baulia, by Captain D. P. Goil. Major J. C. Robertson has been appointed to officiate as Sanitary Commissioner of the United Provinces during the absence on leave of Lieutenant-Colonel J. Chaytor-White. Majors E. V. Hugo and G. Hunt have arrived home on leave. Captain H. H. G. Knapp has been appointed Superintendent of the Central Prison at Rangoon in place of Lieutenant-Colonel G. J. H. Bell, who has been appointed Inspector-General of Prisons in Burma. Captain O. St. J. Moses, civil surgeon, of Purneah, has been appointed to officiate as Police Surgeon, Calcutta, during the absence on deputation of Major W. D. Hayward. Captain D. N. Anderson, officiating civil surgeon of Nagpur, Central Provinces, has been granted furlough on medical certificate for one year. Captain W. L. Harnett has been appointed in charge of the brigade laboratory, Jubbulpore, and to the officiating medical charge of the 22nd Punjabis. Captain G. A. Jolly, after a residence of two years in Japan, has qualified as an interpreter in the Japanese language. Captain J. N. Walker, civil surgeon, on being relieved at Mussooree, has been posted to Rae Bareli. Captain A. S. Leslie has joined the Jail Department of Burma and has been appointed Officiating Superintendent of the Insein Central Jail in place of Captain H. H. G. Knapp, transferred. On return from leave, Captain H. M. Mackenzie has taken over the appointment of Health Officer and District Medical Officer for plague prevention, Simla, relieving Lieutenant-Colonel H. B. Melville. Lieutenant A. M. Jukes, in charge of the brigade laboratory at Shillong, has been appointed a specialist in the Prevention of Disease. Lieutenant C. G. Jolly has been appointed a specialist in Radiography and Electrical Science to the Second (Quetta) Division.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

No. 18 Field Ambulance: The under-mentioned officers of the Royal Army Medical Corps, Territorial Force, are appointed in the ranks as stated against their names (dated March 7th, 1910):—Lieutenant-Colonel John B. Mann, 1st East Lancashire Field Ambulance, Royal Army Medical Corps, to be Lieutenant-Colonel; Major William B. Pritchard, 1st East Lancashire Field Ambulance, Royal Army Medical Corps, to be Major; Major Fred D. Woolley, 2nd East Lancashire Field Ambulance, Royal Army Medical Corps, to be Major; Captain George Ashton, 2nd East Lancashire Field Ambulance, Royal Army Medical Corps, to be Captain; Captain Charles Roberts, 1st East Lancashire Field Ambulance, Royal Army Medical Corps, to be Captain; Captain Henry G. Smeeth, 1st East Lancashire Field Ambulance, Royal Army Medical Corps, to be Captain; Lieutenant A. E. Hodder, from the List of Officers Attached to Units other than Medical Units, to be Lieutenant; Lieutenant Thomas Carnwath, 2nd East Lancashire Field Ambulance, Royal Army Medical Corps, to be Lieutenant; Lieutenant William H. P. Hey, 3rd East Lancashire Field Ambulance, Royal Army Medical Corps, to be Lieutenant.

TERRITORIAL FORCE.

Royal Field Artillery.

2nd West Riding Brigade: Supernumerary Surgeon-Captain John C. Wright is restored to the establishment (dated Jan. 17th, 1910).

Royal Engineers.

Lancashire (Fortress): Surgeon-Captain John Wesley

Lloyd to be Surgeon-Major (dated April 1st, 1908). Surgeon-Lieutenant John Owen to be Surgeon-Captain (dated Oct. 5th, 1908).

Royal Army Medical Corps.

3rd East Anglian Field Ambulance: Major and Honorary Surgeon-Lieutenant-Colonel Harry Thornton Challis takes precedence next above Major Josiah Oldfield.

2nd Northern General Hospital: Leonard Ralph Braithwaite to be Captain, whose services will be available on mobilisation (dated May 1st, 1910).

2nd Western General Hospital: Archibald Donald to be Captain, whose services will be available on mobilisation (dated March 6th, 1910). George Redmayne Murray to be Captain, whose services will be available on mobilisation (dated March 7th, 1910).

Attached to Units other than Medical Units.—Captain John F. Crombie to be Major (dated May 26th, 1910). Captain Robert Rannie to be Major (dated June 1st, 1910). Lieutenant John B. Rous resigns his commission (dated July 13th, 1910).

For duty with Units other than Medical Units.—Arthur Hill Burnett to be Lieutenant (dated June 1st, 1910). Percy Luke Armstrong to be Lieutenant (dated June 3rd, 1910). Alfred Sigismund Bruzaud to be Lieutenant (dated June 4th, 1910).

Unattached List.—Cadet Louis Lawrence Cassidy, from the Royal College of Surgeons (Ireland) Contingent, Senior Division, Officers Training Corps, to be Lieutenant, for service with the Royal College of Surgeons (Ireland) Contingent, Senior Division, Officers Training Corps (dated July 9th, 1910).

TERRITORIAL TRAINING.

The First Eastern General Hospital (Territorial Force) carried out their annual training at Colchester from June 25th to July 9th under the command of Colonel Joseph Griffiths. The camp was located close to the Military Hospital, Colchester, by the side of a section of a field ambulance occupied by No. 9 Company, R.A.M.C. Reveille sounded at 5 o'clock each morning, followed by company and stretcher drill until 7.30 A.M., when breakfasts were served. Lectures and demonstrations on field medical equipment were given from 9 to 10 o'clock, after which the duties varied. The general scheme employed was to attach the Territorial *personnel* to the respective posts they would occupy on mobilisation. This was carried out by allotting some to nursing duties in the wards of the military hospitals, others to cooking, store-keeping, and other routine duties. Half the regular *personnel* of the military hospital was withdrawn, to allow of the Territorials being trained, and sent out for field training under canvas with the sections of a field ambulance. Demonstrations were given in practical camp sanitation, methods of cooking in camp, the conservancy of drinking-water supplies, the means of disposal of excreta, refuse, and so forth. Major F. E. A. Webb of Cambridge acted as registrar of the general hospital, and Captain W. A. Woodside, R.A.M.C., of Ipswich, who is the adjutant of the East Anglian Division, Territorial Force, was present in camp throughout the entire training. Inspections were carried out by Colonel Sir James R. A. Clark and Colonel C. E. Elliston, principal medical officer of the East Anglian Division.

THE NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the directors of the Naval Medical Supplemental Fund, held on July 12th, Inspector-General W. H. Lloyd, R.N., in the chair, the sum of £40 was distributed among the several applicants.

WE regret to announce the death of Dr. J. Hougham Bell at his residence at Ventnor, Isle of Wight, in his 65th year. Dr. Bell, who for many years was surgeon to the Royal National Hospital for Consumption and Diseases of the Chest, Ventnor, received his medical education at King's College, London, of which he was an Associate and Warneford scholar, at the University of Edinburgh, and in Paris. He became a Member of the Royal College of Surgeons of England in 1866, and in the following year took the degree of Doctor of Medicine at the University of Edinburgh. At one time he held the post of assistant medical superintendent at St. Andrew's Hospital for Mental Diseases, Northampton, and was also a resident clinical assistant at the Bethlem Royal Hospital.

Correspondence.

"Audi alteram partem."

AN AMBULANCE SERVICE FOR LONDON.

To the Editor of THE LANCET.

SIR,—That no adequate organisation exists at the present time for dealing with cases of accident or sudden illness in the streets and public places of the metropolis outside the City of London is a sufficiently astonishing fact. For some years past, alike in Paris and in Berlin, in New York and Boston, as also in Liverpool and Manchester, arrangements have been made by the concerted action of the police, the telegraph and telephone, ambulances and hospitals, to give the sufferers from street accidents the advantage of the latest resources of surgical science, and to convey them with the least risk of life or limb to the receiving wards of hospitals or to their own homes. Since 1907 the City of London has also been well provided for in this respect. It has a motor-ambulance, well provided with surgical appliances for accidents, and accompanied by an attendant skilled in giving first aid, which can be summoned by telephone by any City policeman. Call-boxes to the number of 52 are fixed in the principal streets, of which each City constable has a key, and by means of telephone apparatus fixed in these he can also send special messages to the chief office in Old Jewry if necessary. Outside the City boundaries, however, where the control of street traffic is in the hands of the metropolitan police, the most haphazard system, or want of system, prevails.

Some ancient and out-of-date wheeled stretchers are provided at police-stations and elsewhere, but the metropolitan police constable, when called to a case of accident, has no means of obtaining these in a hurry when wanted, and usually trusts to a passing cab, cart, or van, rather than wait half an hour or so while a messenger can be despatched to, and return from, the nearest police-station. In consequence of the increase in motor vehicles of all sorts in London there has been a very considerable rise in the number and severity of street accidents in the metropolis during the last few years. In 1907 the number of persons known to the metropolitan police to have been killed or injured in street accidents was 17,055, an increase of 6515, or 62 per cent. over 1905. At the same time an increase in the gravity of the accidents is indicated by the fact that the number of fatal accidents increased from 155 to 283, or 80 per cent. in the three years 1905–07.

Dealing with this subject in 1904, the chairman of the Ambulance Committee of the London County Council stated that nearly 70 per cent. of the street casualties at present conveyed to hospitals by some vehicle or other are taken in cabs and carts, and not in ambulances of any kind, and on this basis it has been calculated that from 8000 to 10,000 severe accidents were taken to London hospitals or elsewhere annually in cabs, carts, or other unsuitable conveyances. It must be remembered that these figures mainly represent persons constituting a large mass of the inhabitants—artisans and labourers—who are the most liable, by reason of their occupations, to sudden accidents; those, in fact, who are least able to provide for emergencies of that kind, and who, along with their families and dependents, suffer the more when thus overtaken, and especially when, from lack of proper provision at the time of the accident, their recovery and wage-earning power are unnecessarily delayed. On the other hand, it must not be entirely forgotten that the well-to-do citizen of Greater London might in like manner be suddenly struck down and rendered unconscious in the street, and thus have cause to remember with gratitude the preservation of his life or limb by the timely arrival of a well-equipped ambulance at the moment when the bystanders were wondering who he was and where he came from.

Representations on the subject having been made to the London County Council in 1904 by a body of medical men, they thereupon appointed an Ambulance Sub-Committee with Sir William Collins as chairman, and in 1906 applied to Parliament for powers to enable them to establish and maintain, or contribute to the establishment and maintenance of, an ambulance service for street accidents in London, but it appears that the ambulance clauses of their Bill (General

Powers, London County Council) were struck out in the House of Lords owing to the opposition of the Home Office. Lord Camperdown, the chairman of the committee, explained that the committee had been satisfied by the medical evidence brought forward of the desirability of establishing a good ambulance service, but the Home Office was opposed to the scheme of the London County Council, and Lord Beauchamp, representing the Home Office, stated that the Secretary of State was about to summon a conference of the three bodies concerned—the London County Council, the Metropolitan Police, and the Home Office.

The Home Office having thus prevented the London County Council, the only body which had ever applied to Parliament for the purpose, from obtaining the necessary powers for establishing an ambulance service, and finding that it had not thereby got rid of the subject altogether, the Home Secretary, Mr. Gladstone, proceeded, on Dec. 7th, 1906, to appoint a Departmental Committee, consisting of Sir Kenelm Digby (chairman), Lord Stamford, and Sir William Collins, "to inquire as to the provision made for dealing with cases of accidents and sudden illness occurring in streets and public places within the metropolis, and to report whether any, and if so what, improvements in ambulance provision are necessary or desirable, and how they could best be effected with due regard to efficiency and economy."

The Departmental Committee thus appointed spent two years and three months in taking evidence and considering its report. It obtained, we are told, some valuable information in a series of tables furnished by the Commissioner of Metropolitan Police, giving the working of the present system of dealing with cases of accident and sudden illness in the streets, including figures as to the number of cases, the mode of conveyance, the distance of the place where the casualty occurred from the nearest hospital and nearest wheel-litter, and so on.

Whilst the Departmental Committee of the Home Office was thus leisurely pursuing its way the City of London police authorities had already taken action. About the same time that the London County Council had been considering the matter the attention of the City Police Committee had also been called to it. Not being, fortunately for their freedom of action, under the control of the Home Office, nor under any necessity to appeal to Parliament, they had obtained authority from the City authorities to carry out what was seen to be a very great improvement in police administration, and in May, 1907, while the talkee-talkee stage in the Departmental Committee had yet nearly two years to run the City police authorities had established an electro-motor ambulance, summonable by telephone street calls, and had thus exhibited the practical and successful working of a rapid ambulance service in the very heart of the metropolis. This service was commenced provisionally on May 13th, 1907, with one electro-motor ambulance stationed in a temporary building adjacent to St. Bartholomew's Hospital. Eventually the service is to be worked from two stations—one a new building to be rented from St. Bartholomew's, and the other a new building adjoining the Bishopsgate police station. Two, or possibly three, motor ambulances will be used. Each ambulance is to be fully equipped with all appliances likely to be required for first-aid treatment. A system of 52 electric street call-boxes has been organised, by means of which any police constable can summon the ambulance. Each constable carries a call-box key. On the occurrence of an accident the constable who sees it or is called to the spot, if he finds that the case is one apparently requiring removal to hospital, opens the nearest box and pulls a handle, which gives a call at the head office. Communication can also be made at the call-box with the head office by telephone. The one ambulance already in existence serves the needs of the western half of the City, taking cases to St. Bartholomew's Hospital. It is contemplated that the second ambulance will serve the eastern half, working in connexion with the London Hospital. Captain Nott-Bower, the police commissioner for the City, estimates the total annual cost of the three motor ambulances intended to be provided at £3000 and the prime cost of each ambulance at about £600. Captain Nott-Bower says that it has been found after six months' working that the average time taken after the occurrence of an accident for the ambulance to arrive on the scene is under four minutes, and the average time before the patient is delivered in the accident receiving ward of the hospital is only nine and a half minutes, including the time taken in rendering first-aid on the spot; more than half the time previously taken in conveying an injured person to the hospital has thus been saved. When the Departmental Committee came to report upon the means actually in use by the Metropolitan Police for dealing with street cases of accident and sudden illness, they had to confess that it had been abundantly shown that the present system is gravely defective, and results in much preventable detriment by reason of the transport by unsuitable means of persons who have been injured or taken ill in the streets or other public places, and that the real evil arises from the great use which is made of ordinary vehicles such as cabs or vans in even serious cases which require the transport of the patient by the best possible means. At present practically all the cases are transported either by a wheeled litter, a stretcher, or in some ordinary vehicle, such as a cab, van, or tramcar, or are carried to the hospital.

Dealing with the question of police arrangements for summoning the wheeled litter (which the committee are far from regarding as an ideal means of removal), they have to report that at present no special provision is made (as in the City) for summoning it. It is either at the nearest police station or in its place elsewhere in the streets, and a messenger, another constable or a bystander, has to be sent for it—there being no telephone or telegraphic system of signalling available.

Thus far, as we have seen, the Departmental Committee are fully agreed that the present system is gravely defective, and urgently requires a remedy. It is when they come to consider what the remedy should be that differences manifest themselves, and here we get a glimpse of the possible reasons which led the Home Secretary to appoint this committee, when he could himself have easily obtained most of the essential facts they have so laboriously gathered through his subordinates at the Home Office and at Scotland Yard. Two of the committee, Sir Kenelm Digby and the late Lord Stamford, were of opinion that in the present circumstances prevailing in the metropolis the most efficient and economical system would be found in an extension of the non-infectious service of rapid ambulances which has been instituted by the Metropolitan Asylums Board. So far as relates to "street cases," they think this service should be worked in close coöperation with the Metropolitan Police. We do not recommend, they say, any alterations in, or interference with, the existing and contemplated system of rapid ambulances in the City of London.

We recommend, therefore, they continue, that the Metropolitan Asylums Board should be authorised by Act of Parliament to apply their funds to the establishment of a service of non-infectious ambulances for the transport of street cases, and to enter into agreements and generally coöperate with the Metropolitan Police for this purpose. Sir William Collins, the third member of the committee, dissents altogether from this view. He says he fails to appreciate the grounds of policy, administrative efficiency, or economy which would justify the imposition of this duty, for which they have never asked, upon the Metropolitan Asylums Board.

In the City the police authorities, of course, undertake the whole of the ambulance work, and Sir William Collins admits that there is much to be said for the Metropolitan Police undertaking the duty outside the City. If they were, he says, a municipal force as in the City and provinces, there can be little doubt that the duty would fall to them. (Here it must be recalled that the Progressive Party on the London County Council, of which Sir William Collins was one of the shining lights, long ago laid claim to have the control of the Metropolitan Police handed over to them.) But if the police are to be set aside, then he thinks the duty should be entrusted to the London County Council, who have sought powers from Parliament and have evolved a scheme for the purpose, rather than to the Metropolitan Asylums Board who have not. One of the medical witnesses having suggested to the committee that there might be a considerable surplus available from the Metropolitan Police Fund for the expenses of an ambulance service, a memorandum was put in by the Receiver for the Metropolitan Police, which is printed in the appendix to the report, and which shows, not a surplus, but a large deficit in the Police Fund annually. Here we have apparently the whole case against the employment of the police in a nutshell. It would cost too much!

If, now, we try to piece together the various facts we have obtained from the Blue-book containing the report of the

Departmental Committee and the accompanying Memorandum of Sir William Collins, we shall find that this is how the matter now stands. In 1906 the Home Office, the London County Council, and the City Police authorities had all become aware that a properly organised ambulance service was badly needed in London. The City Police thereupon set to work to organise such a system, and since May, 1907, have been working one so satisfactorily that the Departmental Committee of the Home Office has no suggestion to make for its improvement. The London County Council having in 1906 a Bill before Parliament for granting them additional general powers, included clauses enabling them to establish an ambulance service, which in consequence of the opposition of the Home Office were dropped out. Next, the Departmental Committee was appointed, and after two years and three months reported that the case for reform of the existing system (or want of system) had been fully made out, but two out of the three committeemen desired to throw the onus of providing an ambulance service on the Metropolitan Asylums Board, which had never asked for it, and apparently did not want it. As to the Metropolitan Police undertaking the duty, it was alleged they had no funds for the purpose, that they could not out of an annual income of over £2,360,000 provide for the purchase and upkeep of motor ambulances, and that though on occasion they had exceeded their income by £28,000, yet if the cost of providing rapid ambulances were to be thrown on the Police Fund it would become necessary to modify or repeal the statutory limit of 9*d.* in the £ imposed on the police rate by 31 & 32 Vict. cap. 67. Apparently it was thought by the Departmental Committee that the House of Commons would be unwilling to sanction the addition of even a farthing in the £ to the rate (which would have been amply sufficient), and on this ground alone, for none other is mentioned in the report, the majority of the committee decided, in the teeth of the opposition of their colleague, to recommend that the onus of providing an ambulance service for Greater London should be thrown on the Metropolitan Asylums Board.

Since March 1st, 1909, when the Departmental Committee presented its report, nothing whatever has been done by the Home Office to remedy the defects which its committee reported, but Sir William Collins before the Parliamentary session closed got a short Act passed enabling the London County Council, if it chose, to take action in the matter. It remains, therefore, with the Home Secretary recently appointed, and the London County Council recently elected, to say how long the discreditable state of affairs described in the report shall continue, and how much longer the thousands of unfortunate Londoners who annually meet with serious accidents in the streets will have to be carted to hospitals, or conveyed to their own homes, by means of obsolete wheeled litters, a passing growler, or a greengrocer's van.

I am, Sir, yours faithfully,

H. NELSON HARDY, F.R.C.S. Edin.

Croydon, July 8th, 1910.

MEASLES AND THE POST-OFFICE AUTHORITIES.

To the Editor of THE LANCET.

SIR,—Your correspondent, Mr. W. G. Groves, maintains that the infection of measles is frequently carried indirectly, and Dr. R. A. Fryer opposes the new practice of allowing children over seven, protected by a previous attack, to attend school while living in an infected house. This practice was commenced in London, on Dr. J. Kerr's recommendation, after an inquiry into 2700 cases of measles notified in Woolwich in the years 1901–06. The results of the inquiry, which mainly confirmed Dr. Kerr's previous conclusions, were described in papers by Dr. C. J. Thomas and myself, read at the London International Congress on School Hygiene. We came to the following conclusions, among others:—1. Probably every human individual is susceptible to measles until protected by a previous attack. 3. It is impossible to prevent the frequent introduction of measles into schools. 4. Once introduced into a class measles will spread with a rapidity proportional to the number of non-protected children attending, if the class continues to assemble. 12. Though preventive measures have largely failed to reduce the prevalence of measles, education of parents by leaflets, and instruction given by health visitors and others, has the effect of greatly reducing the mortality of this disease. 13. The great majority of children only have one attack of measles, and the infection is unlikely to be carried by a third person. 14. When two-thirds of a class are protected by a previous attack measles is not likely to spread, even if introduced, and measles contacts in the class who have had measles themselves need not be excluded from school. 15. In view of the above conclusions, which have for the most part been arrived at independently by other observers, it is desirable that the medical officers and authorities of schools should revise their regulations as to measles, with a view to avoiding unnecessary interference with education.

Dr. Thomas found that the majority of children in elementary schools over seven years of age had already had measles, and it could therefore usually be safely inferred that children from infected homes, even if they carried a few germs about them, would not convey the infection to classes of children in the boys' and girls' departments, where the children are nearly all over seven. For practical preventive measures one must consider, not possibilities, but probabilities, and the conveyance of measles by a third person can hardly be described as probable. Steps which interfere seriously with education ought to be well grounded, and those who advocate them should be able to show that the gain to health is clear and decided and not merely problematical.

Personally, I am of opinion that there is a very large amount of interference with education for the prevention of infectious disease which is unjustifiable and which causes much unnecessary expense to the parents of children in secondary schools. This is especially the case as regards non-fatal diseases, such as mumps and chicken-pox. The above remarks do not apply to children under seven whose school education is of secondary importance and who may justifiably be excluded from school if there is the least prospect of benefit to their health.

I am, Sir, yours faithfully,

Woolwich, July 9th, 1910. SIDNEY DAVIES.

AN IMPROVEMENT UPON THE SOUR MILK TREATMENT.

To the Editor of THE LANCET.

SIR,—I suppose that there are few of us who have not at some time during the past few years tried to a greater or less extent treating some of our chronic dyspeptics by means of soured milk. Although our experiences and consequently our opinions respecting the treatment have probably varied, there must be few who have not seen benefit result in some cases.

Now, however fond Bulgarians and others in Eastern Europe and Western Asia may become of their sour milk, it is certainly a fact that it is at first distasteful to most Western palates, and though it is usually tolerated on further acquaintance not many people get to like it, and in a great many, if not in the majority of, instances it is discontinued on account of dislike before its full benefit has been reached. In order to circumvent this fact and to extend the benefits of soured milk treatment to many who were either unable or unwilling, or both, to tolerate the distastefulness of the prepared milk, many attempts have been made to administer its active principle in either a tasteless or a palatable form. As bacteriology figures so largely nowadays in medical science, it was perhaps natural that the organism which appears to be the chief active agent in the souring process used in the Balkans should be the first thing credited with the benefits of soured milk. Therefore tablets by many makers, all claiming to contain the one and only necessary organism in pure culture and in an active condition, have been made.

To be fair to the medical designers and the original makers of these it is necessary to state that they were produced for the purpose of being used, according to careful instructions, for the home production of soured milk, and I believe I am right in saying that most of them, when used solely for this purpose, have given every satisfaction. Very soon, though, the tablets themselves began to be taken instead of soured milk, some milk being sometimes afterwards drunk, with the idea that the souring process would take place as efficiently inside the body as out of it, and so the bacilli swallowed would soon be multiplied a thousand-fold and would therefore accomplish what was

required of them; the prevalent idea still being that what was wanted was an overpowering number of living bacilli in the large intestine. With the same end in view, cultures of the bacilli have been incorporated into sweetmeats of various forms and into milk cheeses.

According to my own experience, and also that of all other medical men with whom I have spoken on the subject, treatment by means of what may be called "dry preparations"—i.e., tablets, sweetmeats, &c.—has been uniformly disappointing, while the cheese form of administration, though slightly better than the last, has not given results in any way comparable to those obtained by the administration of properly prepared soured milk. Moreover, the different grades of soured milk appear to be beneficial in direct proportion to their degree of sourness. Having constantly observed this to be the case, I came to the conclusion, from clinical observation, that the active principle of the Metchnikoff milk—i.e., the beneficial agent within the human body—was not the living bacillus but the lactic acid which it had produced. My view of the beneficial effect being, not a war between the bacillus of Massol and the bacillus coli communis, as was at first asserted, but the inhibition of any exuberant growth of bacillus coli by the lactic acid.

To test the soundness of my opinion I had made for my own use and that of some of my patients a syrup of pure lactic acid and sugar in such proportion that when diluted into a palatable beverage with either plain or aerated water it should become a solution of lactic acid of as nearly as possible 1 per cent. I found that this preparation gave all the good results obtainable from soured milk, with the additional advantage that it was palatable and readily taken, having a clean and pleasant taste; that it tended to increase rather than to diminish appetite; that it was found to have remarkable thirst-quenching and thirst-preventing properties; that there was no risk of introducing in it undesirable bacteria as has happened with the milk; and that although in no sense purgative it was found to be distinctly inimical to constipation. To make it more palatable I asked a mineral water manufacturer to bottle some for me, aerated and slightly flavoured, and he has made a very palatable beverage containing as before about 1 per cent. of pure lactic acid.

It is claimed that it is possible to produce in good milk 2·5 per cent. of lactic acid, but I think few of the milks usually made approach this strength, and if they did, I do not believe that many people would be induced to take them. My standard of 1 per cent. was, I admit, arrived at by testing the palatability of solutions of different strengths, and represents merely the quantity of acid which is pleasant to take.

In view of the amount that has been written within the last few years concerning coli and the coli group, it is scarcely necessary to enter into further explanations than to state that the claim that cultures of the bacillus of Massol have themselves the power of inhibiting the growth of organisms of the coli group is not borne out by experiments *in vitro*, where indeed the reverse appears to be the case. On reference to the literature of lactic acid, I find that it has been used and is recommended for the treatment of infantile diarrhœa with green stools, and also of chronic catarrh of the bladder with ammoniacal decomposition of the urine, both of which conditions are well known to be caused principally and usually, if not wholly and invariably, by B. coli and its near relations. In view of the enormous power for mischief now known to be possessed by B. coli and the coli group of organisms, which be it remembered includes B. typhi, and in view of the extremely limited benefit and general disappointment resulting from the administration of ordinary antiseptic substances in the hope of their being effective in relieving intestinal disorders due to excessive bacterial action, the utility of a harmless and not unpleasant agent which appears to have just the desired action would seem to be a very wide one.

To carry this matter further, it is my intention to publish as soon as possible the result of experiments showing the inhibitive action of lactic acid on B. coli and other organisms of the coli group, but I thought that as summer is upon us it would be a pity to withhold the conclusions arrived at by prolonged clinical observation until these were completed.

I am, Sir, yours faithfully,

WM. SALISBURY-SHARPE, M.D. Durh., F.R.C.S. Irel., L.R.C.P. Lond., M.R.C.S. Eng., D.P.H. R.C.P.S. Lond.

July 11th, 1910.

THE WORLD MISSIONARY CONFERENCE AND THE ABUSE OF OPIUM.

To the Editor of THE LANCET.

SIR,—Your editorial of July 9th under the above heading is calculated to create an impression that the fair city of Edinburgh is engaged in an illicit [illegible] immoral export traffic of supplying to China pills containing morphine, and "nominally designed to break the habit of opium smoking." You refer to evidence of all this adduced by the medical missionaries as being "simply appalling," but you give no details of information in support of a charge of so sweeping a character, and we would therefore ask your kind permission to make a few observations on the subject.

It is true that Dr. D. D. Main of Hangchow made a speech at Edinburgh recently which, as reported in the press, conveyed at first sight an impression somewhat akin to that formed by perusal of your own article. It is evident, however, that you cannot have followed the subsequent developments as reported in the *Edinburgh Evening Dispatch*, which give a very different complexion to the incident. Briefly, the outcome of it all is—

That Dr. Main regards the newspaper reports as grossly misrepresentative of what he actually stated. That in his speech he made no charge against the two firms in Edinburgh who are manufacturers of morphine of participating in or being sympathetic with any irregular purposes for which morphine may be or is subsequently employed.

That probably the smuggling, if it existed at all, was done by foreign countries, and that the reference to bicarbonate of sodium was with a view to suggesting that the morphine was smuggled not *as* but *in* kegs of that cheap and popular commodity.

We feel sure you will make the necessary correction in your next issue in order to remove what might be regarded as a damaging reflection on those engaged in the manufacture of morphine, and who conduct their business on perfectly honourable lines.—I am, Sir, yours truly,

For T. and H. SMITH, Ltd.,
ALEXANDER J. DEY, Director.

Blandfield Chemical Works, Wheatfield-road, Edinburgh, July 12th, 1910.

*** We have received a letter also from Messrs. J. F. Macfarlan and Co., the well-known manufacturing chemists of Edinburgh, calling attention to the fact that our editorial remarks would be read as an unqualified endorsement of Dr. Duncan Main's allegations, which were reported to have been made at a meeting of anti-opium, temperance, and other organisations, and not at the World Missionary Conference. Messrs. J. F. Macfarlan and Co. enclose copies of the *Edinburgh Evening Dispatch* which show the situation, on Dr. Main's acknowledgment, to be as described above by Mr. Alexander J. Dey. We much regret to have given currency to imputations which have no support.—ED. L.

A PRELIMINARY NOTE ON THE TREATMENT OF RODENT ULCER BY SOLID CARBON DIOXIDE.

To the Editor of THE LANCET.

SIR,—Dr. R. Morton's letter, which appears in THE LANCET of July 9th under the above title, rightly emphasises the economic importance of a resort to refrigeration of the morbid tissues in rodent ulcer, but when he speaks of this means of physical or molecular action superseding those by radium or the X rays I am unable to agree with him.

It is true that in his experience, as well as in that of others, the action and reaction can both be made to begin and end in the space of a few days. But is the histological texture and cosmetic result as good as that after the treatment by radium or the X rays? The therapeutic action of thermic and of the molecular agents is widely different. Whereas in the former *both the normal and abnormal cells* that inevitably come under the influence of refrigeration to a certain depth are all disrupted past molecular restitution of their proteidogenous matter, in the latter case *abnormal cells alone* are primarily influenced in such a manner that the minute motions of their molecular constituents become past molecular restitution, those in normal cells remaining uninfluenced for a much longer period. The processes of repair in the former case involve the regeneration of the epidermic tissues over the whole site of the reaction, the majority of whose cells are an imperfect replica of the original normal ones; in the latter case regeneration in the same sense is not required, the elimination of the

abnormal cells permitting of a coming together of the original cells there present.

In the third paragraph of his letter Dr. Morton states: "The facts serve to corroborate *my theory* (italics are mine) that the action should be sufficient," &c. I have been searching in vain for his theory, in this as well as in his previous contribution, and therefore beg to suggest briefly a theory in the hope of elucidating the therapeutical and biological effects he has touched upon.—I am, Sir, yours faithfully,

H. D. MCCULLOCH.

New Cavendish-street, W., July 12th, 1910.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Manchester's Water-supply.

WHEN the third great water-pipe from Thirlmere is not yet completed it seems almost premature to think that the lakes of Cumberland and Westmorland may have to yield further supplies to meet the needs of the Manchester district. But the population grows apace and requires far more water in proportion to numbers than sufficed for their grandfathers. This, of course, is all to the good, provided that waste can be checked, but it makes the problem of the water-supply of the large towns increasingly difficult. The population now served is said to be about 1,200,000. Some time in the "seventies," after severe and prolonged opposition, the corporation secured the Thirlmere watershed of 11,000 acres for the people of Manchester for all time. A start was made with the work towards the close of 1886, and eight years afterwards the first instalment of 10,000,000 gallons daily came to the district. The second line of pipes, bringing another 10,000,000 gallons, was completed in 1904, and the third pipe should be completed in 1912. Two other lines of pipes will be required to bring the 50,000,000 gallons which Sir John Harwood, the then chairman of the waterworks committee, said could be drawn daily from Thirlmere. This, in addition to the supply drawn from the Woodhead line of reservoirs, seems an ample supply for some years to come. But the fact that during the past 15 years the average daily consumption of water has increased from nearly 29,000,000 gallons to over 40,000,000 gallons makes it necessary to ask what will be required in 20 or 30 years. Thought is therefore already directed towards possible sources for the future needs of the district, and Haweswater and Ullswater have both been suggested. Indeed, before Thirlmere was decided on, the late Mr. J. F. Bateman, the engineer, suggested these two lakes as affording an ample supply for both Liverpool and Manchester. However, the late Mr. John Grove, a former mayor of Manchester, and the real originator of the Thirlmere scheme, strongly opposed any joint scheme. It is said that it would not be difficult to connect Haweswater with Thirlmere by conduit.

Banquet to Mr. T. C. Horsfall.

The Manchester and Salford Sanitary Association, though ill-supported by the general public, has always had a small band of earnest people, both lay and medical, who have worked steadily for many years in improving the health conditions of the people. The object of the association appeals strongly to the medical profession, who have long recognised the value of the self-denying philanthropic work of Mr. Horsfall in many directions, but especially as one of the staunchest lay supporters of the association. On the occasion of his seventieth birthday he was entertained at a banquet attended by a large number of Manchester's most public-spirited inhabitants, the chairman being Mr. Charles Behrens, the Lord Mayor.

The Building By-laws of Bolton.

Building by-laws are sometimes fairly open to criticism, as Dr. J. H. Thompson of Bolton showed at a meeting of the corporation a week ago. He spoke of the position of the council in dealing with consumption, and said that with the present by-laws, which were a standing disgrace, they were as helpless as children. In houses that are being built to-day he said the sleeping rooms "were not a particle better than the cellars of ancient times." It is to be feared that he rather advocated a counsel of perfection when he said that "in the interests of humanity it was high time they ceased to consider whether houses paid or not, and to say that dwellings should not be built to foster and generate disease." Of course no such dwellings should be built, but the cost of building has greatly increased, so that private people, most of whom want some modest interest for their money, are deterred from building, while if municipal authorities build it is almost always at a loss which falls on the ratepayers. To distribute the inevitable loss among the public in this way seems, however, the only solution of one of the most important economic problems of the day.

Degree Day at the University.

The midsummer Degree Day at the University of Manchester always appeals to local patriotism, and this year, though there was no special medical interest, it was an attractive function. In the absence of the Duke of Devonshire, the Vice-Chancellor, Sir Alfred Hopkinson, presided, and many distinguished men, among whom was Dr. Hicks, the recently-appointed Bishop of Lincoln, received honorary degrees. Of those conferred on ladies, one of the most interesting was that of the M.A. degree conferred on Miss Dendy, who has for 13 years been a member of the Manchester education authority. She was the founder of the National Society for the Permanent Care of the Feeble-minded, a society which may become of untold value in saving the country from the perpetuation of a degenerate and mentally weak population. Through her instrumentality four schools in Manchester have been established for these "mental waifs and strays," as Professor Conway called them, and at the age of 16 they are transferred to the farm-house at Sandlebridge, near Chilford, where they are said to be bright and happy and to be usefully employed. You have more than once had the pleasure of publishing work by Miss Dendy in your columns.

July 12th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

University of Liverpool: Address to the Crown; Graduation Ceremony.

ON July 8th a deputation from the University, consisting of the Chancellor, the Pro-Chancellor, the Vice-Chancellor, and Professor Herdman (the senior member of the Senate), attended at St. James's Palace and presented a loyal address to His Majesty the King on his accession to the throne. The King graciously accepted the address. As visitor His Majesty will be officially connected with the University, an honour which is much valued. In the address allusion was made to the regret of the University that it was now impossible to add His Majesty's name to the list of honorary graduates, and in this way to make him a member of the University.—The graduation ceremony held at St. George's Hall on Saturday, July 9th, attracted a large concourse. Members of the University and leading citizens constituted the interested audience. The ceremony was shorn of much of its impressiveness owing to the absence of several distinguished persons who were to have received honorary degrees, this special function having been unavoidably postponed owing to the death of his late Majesty King Edward VII. The Vice-Chancellor, who presided, was able to give a very encouraging account of progress, and the usual appeal for further funds was made, this year especially on behalf of the Students' Union building fund, for which a further £8000 was asked. The Vice-Chancellor said that this was the end of a very eventful session, the chief matter for regret being the number of good men who had left the University. Their places will be filled or have been filled by the appointment of other good men, but many will miss the old faces, and to some the place can never be quite the same without such old friends as the late Dr. Campbell Brown, and Professor Strong and Professor MacCunn. They unfortunately had to postpone the conferment of honorary degrees, but he hoped that a date would be found possible in November. The ceremony of conferring degrees was then proceeded with, which included recipients from the various faculties.

Complimentary Banquet and Presentation to Dr. William Alexander.

On the occasion of his resignation as honorary surgeon from the Royal Southern Hospital, after 22 years' service, Dr. William Alexander was, on July 8th, entertained at a complimentary dinner which was given by his friends and

colleagues at the Adelphi Hotel, Liverpool. The principal event of the evening was the presentation to Dr. Alexander of his portrait painted in oils by Mr. Frank T. Copnall. Among those present were Sir James Barr, Mr. G. P. Newbolt, Dr. J. Lloyd Roberts, Mr. Robert Jones, Mr. F. T. Paul, Mr. T. H. Bickerton, Dr. W. Carter, Dr. Nathan Raw, Dr. W. Permewan, Dr. F. H. Barendt, Dr. C. J. Macalister, Dr. Hugh Clark, Dr. J. E. McDougall, Dr. J. E. Nevins, and Dr. W. Paterson. Letters of regret were received from several of Dr. Alexander's medical colleagues who were unable to be present. Mr. William Adamson, chairman of the hospital, presided. The toast of "The Royal Southern Hospital" having been proposed by Sir Edward Russell and responded to by the chairman, Mr. Robert Jones proposed the health of Dr. Alexander. By the resignation of Dr. Alexander he said the hospital had lost a most devoted servant, the colleagues of Dr. Alexander a genial and kindly friend, and the public a sympathetic friend who was always a tower of strength in dire affliction. For more than 20 years Dr. Alexander, with wonderful sacrifice and with constant loyalty to his colleagues, had done brilliant work with great cheerfulness. He was the most friendly of men, with whom they had never had even the semblance of a quarrel. Dr. Alexander was not merely a brilliant operator but a philosophic surgeon. There was not a single half-inch of the human body that he had not traversed, and in many regions he had been absolutely a pioneer. Mr. E. G. Buckley, deputy chairman of the Board of Economy of the Southern Hospital, seconded the proposal, which was supported by Dr. Carter. The chairman, in presenting the portrait, said that Dr. Alexander had given devoted attention day and night to the patients under his charge, and during the 22 years of his association with the hospital he had performed about 14,000 major operations. While the portrait was being unveiled those present joined in singing "Auld Lang Syne," and the drinking of the toast was received with further musical honours. Dr. Alexander, in acknowledging the gift, said that when he began his work at the hospital there were only a few diseases that could be cured by operation; when he left there was scarcely a region of the body where surgery was not effective, and operations beyond the wildest dream of surgeons in 1888 were performed safely, quickly, and pleasantly in 1910. He was sorry to sever his connexion with the committee of the Royal Southern Hospital, who, under the leadership of their president, Mr. William Adamson, had built the first modern operating theatre in Liverpool, and the second in England. Their X ray department led the way, and their tropical ward was unique among the hospitals of Liverpool. His professional colleagues were gentlemen with whom he was very proud to be associated. In conclusion, Dr. Alexander paid a warm tribute to the services of the matrons and the nursing staff, who, he said, were the main props of the surgical system of the hospital.

July 12th.

WALES.

(FROM OUR OWN CORRESPONDENTS.)

Public Health Laboratories in South Wales.

IN the year 1899, acting on the advice of the county medical officer of health, Dr. William Williams, the Glamorgan county council established a public health laboratory in Cardiff, and shortly afterwards the corporation of Cardiff undertook to bear a portion of the cost of the enterprise, which has since been under the control of a joint committee of these two bodies, the medical officers of health of the city of Cardiff and Dr. Williams acting as directors, Dr. H. A. Schölberg being bacteriologist, and Mr. J. H. Sugden, M.Sc., F.I.C., assistant bacteriologist and chemist. Systematic work is carried on in the examination of public water-supplies, of samples of food, milk, meat, &c., and of specimens sent by medical men in the town of Cardiff and the county of Glamorgan. It is to be regretted that in his last annual report Dr. Williams had to deplore that more use was not made of the institution by the practitioners of the county. During 1909 there were examined 349 samples of water and 145 samples of sewage, and 906 specimens were submitted to bacteriological examination, of which number 320 were for suspected diphtheria and 250 for the suspected presence of tubercle bacilli. Some three years ago the medical practitioners in Swansea urged upon the corporation of that town the desirability of providing a similar laboratory for Swansea, and although they were not successful in convincing the corporation of the necessity for such an institution, the question has not been allowed to drop, and a proposal has now been made that there should be a laboratory at the Swansea Hospital under the joint control of the hospital board of management and the corporation, who should bear the cost in equal proportions. Deputations from the Swansea Division of the British Medical Association have recently urged these two bodies to coöperate on the lines indicated, and suggested that the medical officer of health, Dr. D. J. Morgan, should act as honorary bacteriologist, assisted by a bacteriologist at a salary of £350 per annum. The working expenses they estimated at £150 yearly in addition. Dr. T. D. Griffiths pointed out that much time was now lost in sending specimens to Cardiff or to London, and Mr. W. F. Brook referred to the usefulness of a local laboratory in the investigation of certain industrial diseases incident to the district, such as plumbism, nickel poisoning, and diseases connected with the manufacture of patent fuel, which is carried on extensively in the neighbourhood of Swansea.

First Aid in Colliery Districts.

Contrary to what might be expected it is only in quite recent years that classes for instruction in first aid have been at all popular in the colliery districts of South Wales. During the first 10 years after the formation of county councils such classes were formed under the auspices of the technical instruction committee of the Glamorgan council, but very little enthusiasm was shown in the subject either by the colliers themselves or by the colliery owners. During the past few years a great alteration has taken place, and now the keenest interest is shown in every form of ambulance work. In the Rhondda valleys this is almost entirely due to the presentation five years ago by Sir Charles Warren of a shield, which is held for 12 months by the team which acquits itself best in an annual competition. There are now in the Rhondda valleys some 3000 men who hold the certificate of the St. John Ambulance Association. There are, however, accidents peculiar to colliery districts for which special provision has to be made. In this connexion the colliery owners of South Wales have not been inactive, and already two rescue stations have been established, one at Crumlin and the other at Aberaman, where suitable apparatus for artificial breathing has been installed and where men are trained in its use. A third station for the Rhondda valleys is to be erected at Porth, at the junction of the two Rhondda valleys, for the use of the collieries in those valleys. The cost, which is to be borne by the colliery proprietors, will be about £5000. It is intended that there shall also be a station at Swansea for the western colliery district and one at Tondu for the Garw, Ogmore, and Llynvi valleys. It would thus appear that in South Wales there will be little need for the compulsory powers contained in the Government Bill introduced into the House of Commons on June 26th by Mr. Masterman, Parliamentary Under Secretary for the Home Office. That Bill seeks to make it compulsory upon colliery owners when required by the Home Secretary to provide efficient rescue apparatus for collieries and to train rescue brigades.

Infantile Mortality in Cardiff.

In his annual report for 1909 the medical officer of health of Cardiff, Dr. E. Walford, is able to report a further decline in the rate of infantile mortality. For the whole town the rate was 103 per 1000 births, compared with 124 per 1000 in 1908, and with an average rate of 139 per 1000 in the 10 years 1899–1908. More than one-third of the total deaths of young children occurred amongst those under one month old, and of these 65 per cent. took place during the first week of life and were for the most part attributed to premature birth, congenital defects, atrophy and debility, and to convulsions, a group of conditions due in all probability to ante-natal causes, depending upon the state of health of the mother during pregnancy. When commenting upon the increasing number of deaths of young children who come into the world prematurely with little chance of survival, Dr. Walford thinks it probable that the increase is more apparent than real, owing to the greater accuracy of certification and registration. The adoption and enforcement of the Midwives Act, 1902, and of the Notification of Births Act, 1907, has led, he considers, to the certification of the deaths of a large number of infants who lived but a very short time, and which under former conditions would have been classed amongst the

unregistered births. The number of births notified to the medical officer of health during 1909 was 97 per cent. of those which were ultimately registered. As many as 90 per cent. of the notifications were from midwives. The satisfactory saving of infant life in Cardiff is no doubt in large measure due to the employment of two health visitors, who for several years have been actively engaged in giving advice to mothers relating to the feeding and rearing of their children. That there is still plenty of scope for the labours of these officials is evident from the fact that in the south ward the infantile mortality rate in 1909 was equal to 154 per 1000 births, while in the Adamstown ward it was as high as 160 per 1000.

July 12th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Chair of Midwifery at Anderson's College, Glasgow.

AT a meeting of the governors of Anderson's College Medical School, Glasgow, held last week, Dr. John M. Munro Kerr, obstetric physician to the Glasgow Maternity Hospital, gynæcologist to the Western Infirmary, and formerly assistant to the professor of midwifery, University of Glasgow, was appointed to the chair of Midwifery and Gynæcology at the school in room of the late Professor John Edgar.

Glasgow Dental Hospital.

The recently issued annual report of the Dental Hospital in Glasgow indicates that that institution is doing a good work and gradually extending its sphere of influence. There can be no doubt that many of the less well-educated classes are awaking to the advantages of attending to the teeth before the process of decay has rendered conservative measures impossible. The number of patients treated in the hospital last year was 14,362, being an increase of 1003 on the record of the previous year. Last year the proportion of conservative operations reached its highest mark, being a little over 76 per cent. of the whole, and this year that proportion has been maintained. The hospital was opened in 1885, and since that time there have been gratuitously treated 162,603 cases of various forms of dental disease. The number of students at present on the roll as receiving practical training in dentistry is 48. During the past year the directors have expended £1200 in extending the buildings of the hospital.

Important Compensation Case.

In Paisley sheriff court last week the sheriff gave his judgment in an important and, from the medical point of view, rather interesting compensation case. The action was raised by a widow for compensation for the death of her husband, Samuel Dunnigan. While at his work he was struck by a stone falling on him from above. He continued to work throughout that day and for three days afterwards, when he returned to his home in Elderslie feeling unwell. The medical man ordered him to be sent to the cottage hospital, where he remained for two days and then insisted on being taken home. The day after he returned home he died from pneumonia. The sheriff found the defenders liable in compensation and also in expenses. In a note he added that the history of the accident, the sequence of the man's symptoms, the post-mortem finding of pneumonic engorgement of the lung at the right base, all corresponded with the theoretical construction of a case of contusional pneumonia, and admitted of no other satisfactory explanation. The pre-existing lung disease discovered at the necropsy—viz., the abscess at the left apex and the old pleuritic adhesions—doubtless rendered it easier for pneumonia to supervene upon the injury, and the man's folly in leaving the hospital probably accelerated his death, but these circumstances could not disestablish the conclusion that but for the accident he would not have died how and when he did die.

Forfarshire Medical Association.

The fifty-second annual meeting of the members of this association was held on July 1st, in Montrose, Dr. H. J. Hoile (Montrose), vice-president, presiding. The following were appointed as office-bearers for the year:—President, Dr. J. K. Tulloch (Dundee); vice-presidents, Professor J. A. C. Kynoch (Dundee) and Dr. A. E. Kidd (Carnoustie); members of council, Dr. W. E. Foggie, Dr. W. S. Malcolm, Dr. G. F. Whyte, Professor D. MacEwan, Dr. C. McVicar, and Dr. A. MacGillivray; treasurer, Mr. L. T. Price; general secretary, Dr. G. W. Miller; reporting secretary, Dr. C. Kerr; local secretaries, Dr. T. B. Adam (Brechin), Dr. Hoile (Montrose), Dr. D. Laing (Arbroath), and Dr. J. D. L. Macalister (Forfar). The members afterwards dined at the Star Hotel.

July 12th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

A Housing Scheme in Dublin.

A FEW weeks ago the chief engineering inspector of the Local Government Board held an inquiry into the merits of a proposal by the corporation to build houses for the working classes in the "Cook-street area." It appears that under Mr. Clancy's Act of 1909 the corporation in dealing with the problem could proceed in one of two ways. Part I. enables the corporation upon the certificate of its medical officer of health to compulsorily acquire, subject to arbitration as to price, sites and buildings thereon, such districts as constitute "unhealthy area." Part II. casts upon the corporation the "duty" of inspecting districts to ascertain "whether any dwelling-house therein is so dangerous or injurious to public health as to be unfit for human habitation," and ordering the removal or rebuilding of such premises. In the present instance the corporation is proceeding under Part I., the expense to be incurred being therefore very great. In a report in 1909, however, the medical officer of health, in speaking of Cook-street district, said not only of the buildings to be removed but of the surrounding property, in the midst of which the corporation proposes to provide new dwellings, that "all the houses, courts, and laneways are unfit for human habitation." It appears, therefore, that whereas the corporation has the power of compelling the slum-owners either to clear the ground or rebuild the tenements, it has decided to buy out the rights of the owners at a price to be fixed by arbitration. Naturally, this unnecessary expense has roused opposition from the ratepayers, and there is danger of the whole scheme miscarrying.

King's Professorship of the Practice of Medicine.

The Royal College of Physicians met on July 8th to elect a King's Professor of the Practice of Medicine in room of Dr. J. Magee Finny, who did not seek re-election. It is the duty of the King's professors to give clinical teaching in Sir Patrick Dun's Hospital, and systematic lectures in the School of Physic in Trinity College, and their election rests with the Fellows of the Royal College of Physicians. The election resulted in the appointment of Dr. James Craig, who has been for several years physician to the Meath Hospital. Dr. Craig's appointment vacates the office of registrar of the College, which he has held for 13 years. It is stated also that he does not intend again to be a candidate for the general secretaryship of the Royal Academy of Medicine, which he has held for six years. There are already many candidates in the field for both posts.

Public Health Administration in Belfast.

It is unfortunate that the public health administration of Belfast should be constantly under discussion, but the board of guardians and the public health committee, both of which have to do with the health of the city, are now disputing. Recently a deputation from the guardians waited upon the public health committee in reference to a letter from the Local Government Board regarding small-pox and also in reference to the present abnormal outbreak of measles, and the guardians' representatives were, according to their statements made in the public press, treated badly. It is said the chairman of the public health committee (who has been quite recently appointed in Dr. J. King Kerr's place) refused to let the guardians know the opinion of the dispensary medical officers as to whether measles should be made notifiable or not. Further, when the guardians asked for the figures showing the death-rate outside as compared with that within the union workhouse hospital, they were met with a refusal. At the board of guardians' meeting on June 28th, at which these statements were made, it was pointed out that during the outbreak of measles at present still raging 376 cases were admitted into the Belfast union workhouse fever hospital, 262 were discharged, 41 died, and 73 were still remaining. The mortality was 10·9 per cent.; and it was claimed that these were the lowest

returns of any similar epidemic in Belfast, and that the death-rate in the city outside the union hospital was nearly double this. It seems that the dispensary medical officers, who constitute the 14 local medical officers of health in their respective districts, sent a resolution which they had unanimously passed recommending that measles should, from a public health point of view, be managed exactly in the same way as scarlet fever or small-pox—that is, as regards isolation, disinfection, and hospital treatment. On July 1st the chairman of the public health committee, at the monthly meeting of the corporation of Belfast, admitted this, but his reply was that in his opinion the resolution of the dispensary medical officers "was rather a tall order." It is known that Dr. C. J. Clibborn, the Local Government Board medical inspector, expressed himself strongly in favour of the view of the dispensary medical officers on the occasion when the guardians' deputation waited on the public health committee. He dissented from the view, which was, it is said, actually put forward, that the best way to treat measles was in accordance with the popular notion that children were bound to take it, so that it was wiser not to bother about the matter, but to let them have it and end the epidemic, the questions of mortality or of sequelæ in measles being apparently of no moment. The chairman of the public health committee said on July 1st that it was impossible to estimate the percentage of deaths of measles occurring outside the union hospital, because the public health committee had no data on which to base its calculations, and that it was not possible under present conditions to get at these figures. This was an inconvenient admission. After the severe way in which the report of the Belfast Health Commission commented on the total absence of vital statistics in the city, recommending, even if fresh legislation should be necessary, that steps should be taken "without loss of time" to remedy this defect, it is awkward to allow that, more than two years after the Belfast Health Commission has reported, nothing has been done. The chairman of the public health committee said that it would be a mistake to make measles notifiable until they had in operation the machinery to cope with it. This is sound, but it is the duty of the public health committee to see that this machinery is got ready. We do not want to have again in Belfast public opinion forcing reforms in public health on the public health committee instead of the latter leading in such vital matters. As a result of the action of the Belfast board of guardians, it was announced in the papers of July 9th that a special meeting of the public health committee is to be held to take into consideration the representations of the board of guardians as to hospital accommodation in the city for the treatment of infectious diseases. The report of Dr. A. G. Robb (physician to the municipal infectious diseases hospital) as to the additional hospital accommodation required at Purdysburn Fever Hospital, will also be considered, as will the report to be submitted by the medical officer of health on the notification of measles. This report has been ordered by the health committee with a view of reporting to the city council of Belfast on the entire question. During the week ending July 2nd 25 deaths from measles occurred in Belfast, while in the whole of the other urban districts of Ireland there was only one death from this zymotic.

Belfast Asylum.

At a meeting of the Belfast Asylum Committee held on July 11th notice of a motion was given that the time had arrived when steps should be taken to dispose of the old asylum property at Grosvenor-road with a view to the transfer of all the patients from the institution to Purdysburn Asylum. There can be no question that it would be a much wiser plan to have all the patients removed to the central asylum at Purdysburn in the country, and the matter will be fully discussed in all its bearings at the next meeting. By selling the old asylum grounds the corporation may raise all the money required for the transference and housing of the patients at Purdysburn.

The Queen's University of Belfast.

The first public graduation ceremony is to be held in the Ulster Hall, Belfast, on July 26th, when the Chancellor, the Earl of Shaftesbury, will preside. The various medical examinations are proceeding at present.

Cowan Heron Hospital, Dromore.

At the tenth annual meeting of this cottage hospital, held on July 8th, it was reported that Mr. W. C. Heron, D.L., who founded it, had during the year handed to the trustees £3000, for which he was heartily thanked. 56 cases were treated during the past year, of which 19 were surgical and 37 medical. The income was £430 5*s.* and the expenditure £338 12*s.* 10*d.*, leaving a balance of £91 12*s.* 4*d.* to be carried forward. The medical staff were thanked for their gratuitous services.

July 12th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Sale of Quinine in Tunis.

THE Director of Finances in the Government of Tunis has recently made an order which will give increased facilities for the public sale of quinine at a moderate price. From July 1st all the retail tobacconists in that country are under an obligation to sell chlorhydrate of quinine to the public in boxes containing 20 *dragées* of 20 centigrammes each, to be supplied by the central warehouse to which they ordinarily have recourse. Pharmaceutical chemists making application to that effect will receive supplies of these *dragées* from the monopoly department, and will sell them to the public on terms corresponding with those appointed for the retail tobacconists.

Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.

At a meeting of the Société Médicale des Hôpitaux held on June 17th, M. Kuss, physician to the sanatorium at Angicourt, showed three patients who had been treated by the intentional formation of pneumothorax. One of them had suffered from chronic pleurisy with suppuration; under the influence of intrapleural injections of nitrogen the lesions improved and the effusion diminished. The other two patients had not suffered from pleurisy, but had received intrapleural injections of nitrogen on account of pulmonary disease. These injections had to be repeated somewhat frequently owing to the rapid absorption of the nitrogen. The condition of the patients had improved. In describing the method of making these injections M. Kuss said that they presented some difficulties on account of which it was desirable that the operator should have the assistance of radioscopy.

The Treatment of Cobra-bite.

The cobra is the most formidable of poisonous serpents, for its bite is considered to mean certain death, the action of its poison being terribly rapid. The method of preparing an antivenomous serum was discovered some time ago, and it subsequently occurred to M. Dastre, a professor at the Sorbonne, that in a case of cobra-bite means might be found for retarding the action of the poison until the serum could be administered and sufficient time allowed for it to produce an effect. Speaking on the subject at a meeting of the Academy of Sciences, held on July 4th, he said that the deadly influence of cobra poison was exerted on both the respiratory and the circulatory systems, a physiological fact which led him to presume that in a case of cobra-bite artificial respiration might prolong the interval of resistance offered by the victim's organism to the action of the poison. Further investigation showed that in rabbits a dose of poison which ordinarily proved fatal in 25 minutes required nine hours for the fatal effect when the animal had been treated by artificial respiration. He therefore recommended that artificial respiration should be employed immediately after a person had been bitten, and that antivenomous serum should be injected as soon as possible. The serum required an hour or two for the production of its effect, and the artificial respiration ought to be continued without interruption during the whole time.

Fatal Accident to a Medical Man.

After spending the evening of July 4th at a music-hall in the Champs Élysées, Dr. Duchastelet was preparing to return home in his electric coupé, and was in the act of lighting the lamps when the vehicle suddenly started off and threw him violently against a carriage which was standing at a distance of a metre in front. The unfortunate man was terribly crushed, while the two vehicles, the one pushing the other, still went forward and overturned a passing cab. The bystanders having come to his assistance, he was removed to the Hôpital Beaujon where he died

on his arrival. Dr. Duchastelet, who was 52 years of age, had been a pupil of Professor Guyon, and in his practice he devoted special attention to diseases of the genito-urinary organs. A man of genial disposition, he was very popular in literary and artistic circles. He was an intimate friend of the great painter Meissonier, who, on his death, left him the horse which had served as a model in several representations of battles. Dr. Duchastelet was also a devoted friend of François Coppée, was constantly with him during the closing period of his life, and on his death succeeded to all his property.

Treatment of Hæmophilia by Animal Serum.

At a meeting of the Surgical Society held on June 22nd M. Broca said that the use of injections of animal serum for the arrest of hæmorrhage was permissible only in cases of genuine hæmophilia diagnosed either by the clinical history or by examination of the blood. Most of the failures which had been encountered arose from attempts to employ this method in the case of patients suffering from hæmorrhage due not to hæmophilia but to some other cause. The coagulation of the blood was always retarded in hæmophilia, and this retardation was antagonised by the injections of serum. In four patients whose progress had been followed for several years preventive injections of serum given every three months had proved very beneficial, and coagulation of their blood now occurred in 20 or 30 minutes instead of, as formerly, in periods varying from 3 to 12 hours.

The Organisation of the Vaccination Service in Paris.

The Paris Municipal Council, as the result of a report of the Prefect of the Seine, is organising a vaccination service. The public will be able to get vaccinated and revaccinated by the medical men of their choice, and the certificates of the medical men, certifying that vaccination or re-vaccination has been performed with success, will be registered. The vaccination and revaccination will be performed gratuitously at regular hours, the place of operation being selected in different districts. The administration of the Assistance Publique will receive payment for the use made of its premises. The selected medical man will receive a fixed fee of 15 francs for each attendance and 30 centimes for each vaccination. The vaccine will be furnished by the public authorities. In the maternity institutions vaccination of infants will be regulated by the Assistance Publique through medical men and midwives, who will receive a fee of 15 centimes for each operation, while medical inspectors of the schools of the city will superintend revaccinations of the children in their eleventh year.

July 12th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

Alcoholism and Pornography.

THE "Third Italy," as it is called, by way of distinction from the "first" or pagan, and the "second" or mediæval, Italy, is confronted with two social problems of vast proportions and bewildering complexity—to wit, "how to antagonise and ultimately to control the tendency to alcoholism and sexual vice." The former of these (alcoholism) was practically unknown to the first or pagan Italy; the latter is in no wise less real, if not more obtrusive, than under the later Republic and subsequent Empire. Both are now "burning questions" before the legislature. Both, under the Budget of the Minister of the Interior, have just been engaging Parliament in earnest and prolonged discussion. Alcoholism, by the admission of all parties in the State, has, extensively and intensively, become a national scourge, *pari passu* with the increase of population and of industrial activity. Take any main street in the chief cities—the Corso of Rome, for example, or the Toledo of Naples—and note the frequency with which the ominous rubric "American Bar" occurs on either side, thronged all through the day and well into the night by customers for whom "straight drinks" have, within the last decade or so, become an attraction, not to say "craving." Up to the "eighties" of last century the Italian, even of the great industrial centres, rarely drank to excess even the thin wines of his native country. Intoxication and the crime engendered by it were exceptional occurrences. Now there is an all too manifest change for the worse. Drunkenness has become common enough to lose much of the disgrace attaching to it, and, particularly among the youth—corresponding to the "prentice" class of seventeenth century London—it is the provoking cause of the hooliganism which has made the lower quarters or the less frequented thoroughfares of Milan, or Florence, or Rome, or Naples quite unsafe for the respectable wayfarer. The recent introduction of the "day of rest," far from conducing to healthy recreation or to the encouragement of refined amusement, has, on the testimony of such authorities as Professor Angelo Celli, given a fresh impetus to dissipation, followed by the opening of "osterie" (public-houses) at hours when they used to be closed and by the thronging of the streets with

"Arm-linked youths meandering home,"

coming into collision with others in similar condition or with the well-conducted citizen, male and female. Take any journal of any of the great cities referred to and note the frequency with which the "teppista" (the Italian equivalent for hooligan or *apache*) contributes to the "cronaca nera" or police report during the week, and you will form some notion of the crime, encouraged or intensified under the incentive of strong drink, of the turbulence imparted by it into the thoroughfare, and of the misery which darkens the domestic circle. This sad innovation in Italian centres, discussed and deplored in Parliament, has inspired the Prime Minister, Signor Luzzatti, who also presides at the Home Office, to start an "inchiesta" (inquiry) through the prefects of the kingdom as to the spread of alcoholism, the crime, the disease (mental as well as physical) engendered by it, the means by which "artificial thirst" is created and gratified, and the steps to be taken for the control of the liquor traffic. The circular before me, with its five heads indicating the direction in which the prefects are to report to the Home Office on the prevalence, the causes, and the control of the evil, is a measure adopted not a day too soon if Italy is not to lapse still further on the down grade (physical and mental) on which she has lately been descending.

Not less deplorable is the sexual vice with which Signor Luzzatti is endeavouring to grapple—vice all too familiar to pagan antiquity (*teste* a Juvenal or a Martial), but not less gross, physically and mentally, in what is proudly called "La Terza Italia" (the Third Italy), the Italy of to-day. Again the Italian Premier has addressed to the local authorities, municipal and communal, urban and provincial, throughout the kingdom an energetic circular drawing their attention to the incentives, the provocatives to "venery," conveyed in the pornographic "literature," printed and illustrated, exhibited at every kiosk, at every railway-stall, at every newsvendors', aye, and even in the shop windows of booksellers who pose as respectable. To check or suppress the supply of that "literature" will tax, indeed, all the ingenuity of Italian officialdom, purveyed as it mostly is from abroad—Paris alone (as came out at the Anti-Pornographic Congress held there two months ago) contributing to it by the ton and contriving to have it so conveyed, under fictitious labels, from one port to another, as to make detection supremely difficult. Last year there were confiscated on the premises of one photographer in the French capital 60,000 kilogrammes of obscene pictures; in the establishment of another the impounded postcards, photographs, figures in gypsum or papier-maché of the most lascivious character required several wagons for their removal; while one vendor of "pornography," condemned to a term of imprisonment for his misdeeds, had been so enriched by his *métier* as to have a superb automobile in waiting for him at the jail doorway to take him home on the day of his release! Here, indeed, is a problem of the "sparingly soluble" kind! Fine art, literature, scenic representation, all are nowadays infected with an animalism, a sensuous fleshliness, at their worst, no doubt, in Latin countries, but gradually spreading from these into what used to pride itself as the more austere civilisation of the North—witness the recent revelations in the Prussian capital of Sapphism and homosexualism, and the trials at which the high-placed offenders in this direction had to be examined with closed doors! Not till this "sensuous wave" (as it has been called) has subsided and a purer spirit is in the ascendant can we expect, particularly in the more backward populations of the South, a cessation of the call for lust-provoking literature. Education may do much, in regions where an appeal to the merely animal instincts meets an all too ready response; example, on the part of the accepted leaders of society,

may also contribute powerfully to the rehabilitation, moral and intellectual, of the less favoured; the professions, medical, even more than clerical or forensic, by indicating the degeneration induced by the merely "animal" cult, will also have their salutary influence. But all these are, at the best, but gradual in their coöperation and effective working, and the evils in question—alcoholic excess playing into the hands of sexual indulgence—brook no delay in the antagonising agencies. While, therefore, the regulation of the liquor traffic and the stamping-out of lascivious publications, on the lines imposed by the Italian Premier, must proceed apace, let us hope that the ground thus cleared may be utilised by the educational reformer, in the largest sense, for the steady formation of a purer taste, a more refined mental atmosphere under which the grosser animalism can only wither and die.

July 6th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Remarkable Feats by a "Stone Swallower."

IT seldom happens that an opportunity presents itself for the scientific examination of those abnormal persons who are in the habit of swallowing stones, glass, iron nails, and similar "foreign bodies," but at a recent meeting of the Gesellschaft für Innere Medicin in Vienna Professor Schlesinger showed a man who performed feats of this kind in music halls. In the presence of the professional audience he swallowed fragments of glass measuring 1 inch by 1½ inches, nails of different sizes up to 3 inches in length, stones of all shapes up to the size of about a walnut; he afterwards also swallowed a long snake and a lizard! During the act of swallowing he made no movements of deglutition, but he seemed to drop the articles down his œsophagus as one would drop them into a bag, bending his head well back just as is done in œsophagoscopy or bronchoscopy. His œsophagus was abnormally wide and it sometimes became quite flaccid, as he had the faculty of easily and voluntarily relaxing the normal tonicity of the muscular tube. Constant repetition of these performances had caused a hypæsthetic condition of the upper alimentary organs, so that he could swallow hot liquids of a temperature up to 80° C. Examination of the œsophagus showed that it had a pale red, glossy, tough mucous lining (loss of epithelium?) of a leathery consistence; the muscular contractions, which could be produced at will, extended along the whole tube, beginning at the upper opening, and presenting a peristaltic character. During rest the walls of the œsophagus were in a state of apposition, but they readily separated for a distance of an inch. The man had also acquired a certain degree of immunity against poison. He could swallow the heads of two packets of phosphorus matches with impunity, and was unaffected by strychnine given in twice the quantity fatal to an ordinary individual. Most of the foreign bodies which he had swallowed passed through the intestines and were generally evacuated within 24 hours, but in some cases he was able to bring them up and to expel them from his mouth by a sort of ruminating process. His general condition was satisfactory, his appetite was good, and he always masticated his food very carefully.

The Wassermann Reaction in the Dead Body.

At a recent meeting of the Gesellschaft Deutscher Aerzte Dr. Luksch described the results of observations made by him on 330 dead bodies, of which 309 were capable of supplying reliable data as to the presence or absence of the Wassermann reaction. He found that 46 per cent. of these 309 bodies gave a positive Wassermann reaction, but he did not from this fact infer that that proportion of the deceased had succumbed to the effects of syphilitic disease. He believed that the occurrence of the Wassermann reaction shortly before or after death did not prove anything, because, in his opinion, serious disease produced changes in the blood serum which might cause it to yield the reaction in question; this might take place a long time before the close of life. During the course of sepsis, uræmia, or pneumonia, such changes were observed very often, even if the patient recovered completely. He therefore considered that a positive Wassermann reaction was not pathognomonic of syphilis, because under certain conditions both during life and after death it might occur in persons who were certainly free from syphilis. For this reason a pathologist was not entitled to diagnose syphilitic changes if the Wassermann reaction was present in the cadaver, and in cases of serious illness a phyician must be careful not to rely too much upon the reaction.

The Temperance Movement in Austrian Health Resorts.

The Austrian Anti-Alcohol Society has recently made endeavours, by the holding of public meetings and otherwise, to establish local branches in various important health resorts of the Empire, such as Baden, Teplitz, and Meidling, where every year thousands of gouty and arthritic patients seek relief, and where, owing to the non-existence of any temperance restaurant, the patients formerly had to consume alcohol in some form or other at dinner, according to the custom of the country. Recently, however, in consequence of the action of the Anti-Alcohol Society, establishments conducted on temperance lines have been opened in all these places and are favourably regarded by the local medical men. The financial success of these undertakings has proved that, for the present at least, the patients at the health resorts are not insensible to the advantages of a non-alcoholic *régime*. The Anti-Alcohol Society, knowing that there are many medical visitors to these health resorts at this time of the year, has asked several leading physicians to deliver appropriate lectures on the subject of temperance.

The Question of Remuneration for Attendance on the Families of Medical Practitioners.

There is no general agreement of opinion in this country with regard to the propriety of a practitioner asking or accepting payment for professional services rendered to the family of another medical man. Negotiations, however, have been undertaken with a view to arriving at some definite conclusion on the subject, and it is found that the old custom of "no fee" is meeting with decided opposition on the part of nearly all well-to-do practitioners. The prevailing idea seems to be that only such attendance as is given to a medical man himself shall be considered a personal favour, and that attendance on members of his family ought to be paid for at a discount of 50 per cent. on the usual charges. This suggestion was discussed at a recent meeting of the Aerztevereins Verband (Union of the Medical Councils), and it was decided that the acceptance of fees from practitioners by practitioners shall not be considered unethical. Another suggestion which received support from a minority of the meeting was to the effect that no medical man shall be required to pay for attendance on his family, but that if he prefers to do so the fee shall be handed over by himself either to the fund for the widows and orphans of medical men or to some other benevolent organisation instituted for the benefit of the medical profession. The local medical societies are now asked to decide this important question.

July 9th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

The Proposed National Health Department Charged with being a Medical Trust.

THE opposition to the Bill before Congress creating a Department of Health, the chief officer of which is to be a Secretary of Health and a member of the Cabinet, has taken a new and more popular form. The public opposition in this country to the so-called "Trusts" in business has become so intense and widespread that it amounts to a "craze." This frenzy is now appealed to by the opponents of the Bill, and the agitators have organised the "National League for Medical Freedom" as the central body through which they are to concentrate opposition to the measure. Every nondescript medical organisation—osteopathic, eclectic, "Christian Scientist"—is urged to petition Congress to defeat the "Medical Trust." The manufacturers of patent or proprietary medicines have joined the opposition, and are arousing the druggists to action throughout the country. The popular appeal through the newspapers has the startling headline, "Do you want the Doctors' Trust to be able to force its opinions on you?" Public meetings are being held in the larger cities at which most inflammatory speeches are made against the American Medical Association, "The Committee of One Hundred," and especially against the "Allopaths." What is to be the outcome of this popular uprising cannot be foreseen, but apparently it will defeat the measure in the present Congress.

The New York Post-graduate Medical School: A New Hospital Building.

This institution, the first of its kind in this country, has recently received a large endowment and is about to build a new hospital at an expense of $6,000,000, thus increasing its capacity to 400 beds, and greatly improving its facilities for teaching. The building will be 12 storeys in height and will include a tower with rooms for 50 private patients and a pavilion on the roof for open-air treatment. A loggia on three floors open to the street front and to the rear is planned where beds can be kept permanently with free exposure to the outdoor air. Three long balconies to the eastward are proposed, and the entire top of the main building, seven storeys high, with the exception of the space taken up by the tower, will be occupied by a roof garden. There will be eight small operating rooms and a number of well-equipped laboratories for research work. In all of its appointments for post-graduate instruction the new structure will aim at having no equal in this country.

The Affairs of the American Medical Association.

At the recent meeting of the American Medical Association it appeared that the total membership is 33,935. During the past year 289 members have died, 1937 have resigned, 625 have been dropped as not eligible, 406 have been dropped for non-payment of dues, and 95 have been reported as "not found." Since May 1st, 1909, there have been added 3593 names to the membership list. On May 1st, 1910, the membership list showed 34,176. The property of the association in the hands of the trustees, Jan. 1st, 1910, was $162,348.72.

The Mutual Relations of Life Insurance and the Medical Press.

At the annual banquet of the American Medical Editors' Association at St. Louis, on June 6th, Mr. Frederick L. Hoffman, statistician of the Prudential Insurance Company of America, spoke on the subject of the Mutual Relations of Life Insurance and the Medical Press. He said that the medical press "almost alone supplies the medical and other officers of insurance companies at the earliest possible date, and in the most convenient and economical manner and at least expense, with accurate information always interesting and often extremely useful for the safe conduct of the medical branch of the business of insurance," and drew attention to the fact that as long ago as 1873 the *New York Medical Record* made an effort to maintain a special department of insurance medicine, and that many of the most valuable contributions to the subject had never been reprinted in text-book form and were, therefore, only available through the periodical medical press. The speaker emphasised the value of the medical press to insurance companies by numerous illustrations derived from actual practice.

The Rockefeller Institute for Medical Research.

The board of directors of this institute announces the following promotions and appointments for the year 1910–11. Laboratory staff:—Member: Jacques Loeb, experimental biology. Associates: W. A. Jacobs, biological chemistry; D. R. Joseph, physiology and pharmacology; Peyton Rous, pathology; B. T. Terry, protozoology; and D. D. Van Slyke, biological chemistry. Assistants: M. T. Burrows, experimental surgery; P. F. Clark, bacteriology; I. S. Kleiner, physiology and pharmacology; and Hardolph Wasteneys, experimental biology. Fellows: F. J. Birchard, biological chemistry; and F. B. La Forge, biological chemistry. Scholar: J. Bronfenbrenner, pathology. Hospital staff:—Resident physician: G. Canby Robinson. Internes: George Draper, H. K. Marks, F. W. Peabody, and H. F. Swift. Mr. Jerome D. Greene has been appointed general manager.

July 6th.

LONDON SCHOOL OF TROPICAL MEDICINE.—A course of lectures to nurses on tropical diseases will commence at the London School of Tropical Medicine, Royal Albert Docks, E., on Oct. 15th next. The course will consist of ten lectures and the fee, including examination, will be £2 2s. The lecturers are Dr. A. Duncan, Mr. J. Cantlie, Dr. F. M. Sandwith, Dr. C. W. Daniels, and Dr. R. T. Leiper. A similar course of lectures will be held in February, 1911.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were approved:—

FIRST B.M. EXAMINATION.

Organic Chemistry.—W. H. Bleadon, Brasenose; B. A. Bull, Jesus; J. J. Conybeare, New College; J. M. Guilfoyle, Brasenose; C. W. Littlejohn, New College; T. E. Micklem, New College; H. M. Oddy, Christ Church; K. R. Pilcher, University; H. A. B. Whitelocke, Christ Church; and C. D. Wood, Queen's.

Anatomy and Physiology.—T. B. Batchelor, University; F. W. Brown, Wadham; E. W. Carrington, Keble; C. Dean, Trinity; H. T. Evans, Jesus; R. A. Fawcus, Oriel; W. J. Hart, Queen's; R. St. A. Heathcote, New College; S. Hibbert, University; E. W. N. Hobhouse, New College; W. R. Reynell, Balliol; E. Scott, St. John's; A. H. Southam, Christ Church; A. B. Thompson, New College; W. W. Waller, New College; C. W. Wheeler-Bennett, Christ Church; and Syer B. White, Keble.

SECOND EXAMINATION FOR B.M., B.CH.

Medicine, Surgery, and Midwifery.—M. B. Baines, Exeter; C. N. Binney, Corpus; R. F. Bridges, University; G. N. Hunt, Christ Church; G. E. Nelligan, Exeter; A. F. Sladden, Jesus; B. A. W. Stone, Brasenose; and A. E. Taylor, Trinity.

Pathology.—C. P. Beevor, Magdalen; A. R. Chavasse, Hertford; A. W. Donaldson, Hertford; H. J. B. Fry, Magdalen; T. B. Heaton, Christ Church; N. S. Lucas, New College; E. O'Connor, Lincoln; W. J. Oliver, Oriel; H. W. Scott-Wilson, Queen's; C. J. G. Taylor, University; G. H. Varley, St. John's; W. E. Waller, University; R. C. Wingfield, Trinity; and J. A. Wood, University.

Forensic Medicine and Hygiene.—F. A. Aldridge, Magdalen; C. P. Beevor, Magdalen; A. W. Donaldson, Hertford; C. Newcomb, St. John's; E. P. Poulton, Balliol; A. S. Roe, Balliol; B. A. W. Stone, Brasenose; and A. E. Taylor, Trinity.

Materia Medica.—A. W. Cooke, Worcester.

DIPLOMA IN PUBLIC HEALTH.

Part II.—C. V. Asreppa, J. B. Mama, and W. F. J. Whitley.

Parts I. and II.—F. Griffith and J. F. Windsor.

Part I.—G. Finch, Rachel E. W. Mackenzie, and J. E. Spenser.

—The Professor of Anatomy has reported to the Vice-Chancellor that he has awarded the Welsh Prize, 1910, for proficiency in anatomical drawing to Charles Milwyn Burrell, scholar of University College.—The Board of Management has elected the following to the Theodore Williams Scholarships, 1910: Arthur Hughes Southam, B.A., Christ Church, to the Scholarship in Anatomy; and Reginald St. Alban Heathcote, scholar of New College, to the Scholarship in Physiology.—Edward Stainer, M.A., B.M., B.Ch., Magdalen College, has been allowed to supplicate for the degree of Doctor of Medicine, for a thesis on "The Hereditary Transmission of Defects in Man," and Stephanus Gottfried Kriegler, Hertford College, has been allowed to supplicate for the degree of Bachelor of Science for a thesis on "The Action of Various Aniline Dyes on Certain Micro-organisms."

UNIVERSITY OF CAMBRIDGE.—At examinations for medical and surgical degrees, held Easter term, the following candidates were successful:—

FIRST EXAMINATION.

Part I., Chemistry.—P. H. Allen, Pembroke; B. S. Bland, Emmanuel; H. R. Buttery, B.A., Christ's; H. F. Edmonds, Emmanuel; C. C. Goodall and C. Grantham-Hill, Caius; A. H. Little, Corpus Christi; R. A. Mansell, Emmanuel; E. W. Mason, St. John's; B. Mountain, M.A., Sidney Sussex; G. B. Sellwood and E. W. L. Sharp, Emmanuel; H. W. Spicer, Jesus; and G. S. Trower, King's.

Part II., Physics.—P. H. Allen, Pembroke; H. R. Buttery, B.A., Christ's; W. H. Edgar, Trinity Hall; C. H. Gow and L. H. James, Emmanuel; A. H. Little, Corpus Christi; R. A. Mansell, Emmanuel; R. H. Marten, Caius; B. Mountain, M.A., Sidney Sussex; H. W. Spicer, Jesus; and H. N. Stafford, Caius.

Part III., Elementary Biology.—A. C. Ainsley, Caius; P. H. Allen, Pembroke; A. B. Bratton, Caius; A. G. Courtis, Pembroke; H. F. Edmonds, Emmanuel; H. Gardiner-Hill, Pembroke; C. C. Goodall and C. Grantham-Hill, Caius; J. B. Hunter, St. John's; L. H. James, Emmanuel; W. Lambert, Corpus Christi; J. B. Leather, Caius; A. H. Little, Corpus Christi; R. A. Mansell, Emmanuel; R. H. Marten, Caius; K. Masson, King's; B. Mountain, M.A., and A. V. O'Keeffe, Sidney Sussex; W. Raffle, St. John's; J. C. Russell, Caius; and E. W. L. Sharp, Emmanuel.

SECOND EXAMINATION.

Human Anatomy and Physiology.—M. Avent, Caius; W. F. Bensted Smith, B.A., Pembroke; W. G. Bigger, Queen's; J. Brewer, Emmanuel; R. St. L. Brockman and G. d'R. Carr, Caius; L. B. Clarke, B.A., Emmanuel; K. B. Dickson, B.A., Trinity; A. T. Edwards, St. John's; A. N. Garrod, B.A., Emmanuel; H. H. M. Gould, Clare; A. R. Jennings, B.A., Jesus; J. D. Jones, B.A., H. Selwyn; F. G. Lescher, Caius; H. A. Lucas, B.A., Trinity; G. R. D. McGeagh, B.A., H. G. Oliver, and D. S. Page, Caius; V. C. Pennell and W. A. Pocock, Pembroke; R. N. Porritt, Caius; A. N. Rushworth, Trinity; A. P. Saint, Downing; L. E. S. Sharp, Trinity; A. G. Shera and G. D. Sherwood, B.A., Emmanuel; L. R. Shore, St. John's; A. C. S. Smith, Trinity; P. Stocks, King's; H. Walker, B.A., Jesus; H. F. W. Warden, B.A., Pembroke; and H. G. Wiltshire and E. Wordley, B.A., Emmanuel.

THIRD EXAMINATION.

Part I., Pharmacology and General Pathology.—H. W. Barber, B.A., and F. S. Bedale, B.A., Clare; A. C. Clifford, B.A., Emmanuel; A. E. Cullen, B.A., St. John's; J. W. Dew, B.A., Clare; S. Dixon, M.A., Trinity; J. V. Fiddian, Emmanuel; N. Garrard, B.A., Pembroke; J. R. Griffith, M.A., Christ's; J. R. Heath, B.A., Trinity; D. W. John, B.A., Clare; H. Lee, B.A., St. John's; D. N. Macleod, Caius; A. J. McNair, B.A., and Q. Madge, B.A., Emmanuel; W. C. D. Maile, B.A., Pembroke; J. R. Marrack, B.A., St. John's; T. H. Oliver, B.A., and J. H. Pendered, B.A., Caius; D. V. Pickering, B.A., Emmanuel; L. C. Rivett, B.A., and F. A. Roper, B.A., Trinity; F. G. Rose, B.A., St. John's; L. M. Routh, Caius; F. D. Saner, B.A., Christ's; H. J. S. Shields, B.A., Jesus; G. A. Smythe, B.A., Emmanuel; C. Strickland, B.A., Caius; A. L. Sutcliffe, B.A., Sidney Sussex; C. H. S. Taylor, B.A. Caius; M. H. Watney, B.A., Trinity; and A. M. Zamora, Christ's.

Part II., Surgery, Midwifery, and Medicine.—The following have now satisfied the examiners in all three sections:—H. L. Attwater, B.A., and T. R. H. Blake, B.A., Pembroke; L. S. T. Burrell, M.A., Trinity; N. L. Clarke, B.A., Christ's; C. N. Coad, B.A., and A. E. Cullen, B.A., St. John's; M. R. Dellschaft, B.A., Jesus; G. W. Dryland, B.A., Caius; W. H. F. Eales, B.A., Emmanuel; C. D. Embleton, B.A., Christ's; J. T. Fox, B.A., Sidney Sussex; S. Gordon, B.A., Pembroke; R. H. P. Hick, B.A., Christ's; R. F. Higgin, B.A., Caius; J. S. Jobson, B.A., Sidney Sussex; K. T. Khong, B.A., and G. C. Lim, B.A., St. John's; C. G. H. Moore, B.A., Caius; E. E. Paget-Tomlinson, B.A., Trinity Hall; W. M. Penny, B.A., Jesus; L. Powell, King's; F. E. W. Rogers, B.A., Emmanuel; L. M. Routh and H. C. Snell, M.A., Caius; E. R. Stone, B.A., Emmanuel; R. J. Vernon, B.A., and C. St. A. Vivian, B.A., Caius; W. E. Wallis, B.A., Clare; T. A. Weston, B.A., St. John's; M. H. Whiting, B.A., Downing; N. S. Williams, B.A., Clare; and H. B. Wilson, B.A., Pembroke.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination held recently the following candidates were successful:—

PART I.

Biology.—A. U. L. Bennet, Royal Free Hospital; and C. Gilroy-Jones, St. Mary's Hospital.

Chemistry.—C. Gilroy-Jones, St. Mary's Hospital.

Materia Medica and Pharmacy.—P. McGinnis, Glasgow; and J. G. Reidy, Edinburgh.

PART II.

Anatomy.—P. R. Cross, St. Mary's Hospital; G. E. Cuttle, Manchester; R. Fowle, London Hospital; T. H. W. Idris, University College Hospital; J. A. Prendergast, Leeds; and H. G. Steel, St. Mary's Hospital.

Physiology.—H. H. Fairfax, Charing Cross Hospital; T. H. W. Idris, University College Hospital; J. E. Kitchen, Manchester; J. A. Prendergast, Leeds; and H. G. Steel, St. Mary's Hospital.

UNIVERSITY OF BIRMINGHAM: FACULTY OF MEDICINE.—The following is the list of successful candidates at the examinations held in June:—

I. *Degrees of Bachelor of Medicine and Bachelor of Surgery.*—John Lichtenstein Ritchie, Cranston Walker, and Harold Arthur Whitcombe.

II. *Fourth Examination for the Degrees of M.B., Ch.B. (Forensic Medicine and Toxicology and Hygiene and Public Health).*—Class I.: Oscar Madeley Holden (Queen's Scholarship). Class II.: James Henry Bampton, Robert Baxendell Coleman, Christopher Charles Cole Court, Evan Davies, Charles Crawford Jones, Ronald Douglas Nelson, Percy Alfred Newton, Charles Ernest Salt, and Arthur Christopher Tibbits.

III. *Third Examination for the Degrees of M.B., Ch.B. (Pathology and Bacteriology and Materia Medica and Pharmacy).*—Class I.: George Ernest Elkington (Queen's Scholarship). Class II.: Eric Francis Buckler, Horace Clarence Nickson, Percival Thomas Priestley, Herbert Sheasby, and Alan Ayscough Wilkinson. Completed the examination: Christopher Charles Cole Court. Passed in part of the examination: George Herbert Alabaster (Pathology and Bacteriology), Ralph Alexander Broderick (Materia Medica and Pharmacy), David John Evans (Pathology and Bacteriology), and Ronald Joseph Tennant Thornhill (Pathology and Bacteriology).

IV. *Second Examination for the Degrees of M.B., Ch.B. (Anatomy and Physiology).*—Class II.: Elizabeth Labrey Ashby, John Lewis Anderton Grout, and James Henry Ritchie.

V. *First Examination for the Degrees of M.B., Ch.B. (Physics, Chemistry, and Biology).*—Class II.: Reginald George Abrahams, John Edward Foley, Henry Gauntlett Langdale-Smith, Malati Madgavkar, Oscar Parkes, Leslie Douglas Roberts, and Cecil George Teall. Completed the examination: Koch Harry Gill (external), Kenneth Bernard Pinson, Cyril Alban Raison, and Clement Massey Stubbs. Passed in part of the examination: John Clifford Brown (Physics, Chemistry), Eric Shirley Jones (Physics, Chemistry), Arthur David Millington (Physics, Biology), Alfred Sydney Roberts (Physics, Chemistry), Herbert Smith (Physics, Biology), and Bernard Wood-White (Physics, Chemistry).

VI. *Diploma in Public Health.*—Part II. (to complete Examination): Harold Salter Gettings and Philip James Mason.

VII. *Third Examination for the Diploma in Dental Surgery (Anatomy and Physiology and Dental Anatomy and Dental Histology).*—Edgar George Jones (Anatomy and Physiology).

VIII. *Second Examination for the Diploma in Dental Surgery (Dental Metallurgy and Mechanical Dentistry).*—John Jessop.

IX. *First Examination for the Diploma in Dental Surgery (Chemistry and Physics).*—Percy Ashton (Physics), and Harold Gordon Stewart Thornton (Physics).

A DISCUSSION ON THE MEDICAL ASPECTS OF THE POOR-LAW.—A number of medical men have arranged a meeting to be addressed by Mr. and Mrs. Sidney Webb on Wednesday, July 27th, at 4.30 P.M., at the Caxton Hall, Westminster. Invitations will be issued to all those attending the annual meeting of the British Medical Association. Dr. Herbert Manley will take the chair and will be supported by Dr. Christopher Addison, M.P., Dr. Dudley Buxton, and others. Discussion and questions will be welcomed. The speeches will be preceded by a reception at 4 P.M.

THE EDINBURGH UNIVERSITY CLUB OF LONDON.—A dinner of this club will take place at the Criterion Restaurant on Friday next, July 22nd, at 7.30, when the Right Hon. Sir Robert Finlay, G.C.M.G., K.C., M.P., will be in the chair. Colonel the Hon. Frederick Gordon, D.S.O., Colonel G. W. Greig, M.P., the Editor of THE LANCET, the Editor of the *British Medical Journal*, the President of the Royal College of Physicians of London, the President of the Edinburgh University Club of Birmingham, and the President of the Edinburgh University Club of Manchester have accepted the invitation of the council to be present on that occasion.

NORTH DEVON INFIRMARY, BARNSTAPLE.—A meeting of the governors of the North Devon Infirmary was held on July 1st under the presidency of the Mayor. It was stated that owing to the serious financial position of the charity one of the wards had been closed, and the committee was of opinion that patients were kept too long in the infirmary, having regard to the sum paid by the subscribers for the recommending letters. The committee felt that something more drastic than closing a ward must be done if the charity was to pay its way. After some discussion it was decided that no in-patient shall remain in the institution longer than 14 days unless the special sanction of the house committee (acting on the advice of the medical officer of the case) be obtained. If a patient remains longer than two weeks an out-patient "recommend" will be required for each four days of his stay.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill are about to publish the following four books in new editions:—"Serum Therapy, Bacterial Therapeutics, and Vaccines," by R. Tanner Hewlett, professor of general pathology in King's College, London; "The Microscopical Examination of Foods and Drugs in the Entire, Crushed, and Powdered States," by H. G. Greenish, professor of pharmaceutics at the Pharmaceutical Society of Great Britain; "A Manual of Dental Metallurgy," by Ernest A. Smith, late demonstrator in metallurgy, Royal School of Mines; and "Hernia, its Cause and Treatment," by R. W. Murray, surgeon to the David Lewis Northern Hospital, Liverpool.—Under the title "Medical Examination of Schools and Scholars" Messrs. P. S. King and Son of Westminster are about to issue a work directed to the needs of school doctors, school managers, and all interested in the welfare of the school child. The volume, which contains 32 essays by writers of authority in Great Britain, America, and the Continent, is edited by Dr. T. N. Kelynack. Sir Lauder Brunton, Bart., has written the introduction.

THE EIGHTH INTERNATIONAL PHYSIOLOGICAL CONGRESS, VIENNA.—Some particulars concerning this Congress will be found in THE LANCET of March 19th last, p. 829. It will be held in Vienna from Sept. 27th to 30th next, but there will be an informal meeting in the Volkshalle (public hall) of the town hall (Rathaus) on Monday, Sept. 26th, at 8 P.M. The opening meeting takes place on the following day at 10 A.M. at the House of the Imperial and Royal Society of Physicians (Haus der k.k. Gesellschaft der Aerzte), when a lecture will be delivered by Dr. Charles Richet, entitled "L'humorisme ancien et l'humorisme moderne." At 8 P.M. there will be a reception by the Lord Mayor of Vienna, Dr. J. Neumayer, in the town hall. There will be meetings and demonstrations on Sept. 28th and 29th, and on the 30th Professor Ebner R. von Rofenstein will deliver a memorial speech in celebration of the hundredth anniversary of the birth of Th. Schwann. In connexion with the Congress excursions will be made to various interesting places, and visitors to the Congress are also invited to attend the unveiling of the Gregor-Mendel statue which will take place in Brünn on Oct. 1st. Particulars with regard to reserving lodgings should be made to Professor Dr. Armin von Tschermak, Linke Bahngasse, 11, Wien, III. A ladies' committee has been constituted under the presidency of Frau Dina Baronin Buschmann and Frau Mathilde Heller

and will provide for the entertainment of the ladies. Subscriptions should be sent to Herrn Assistenten F. Hauser, Physiologisches Institut, Währingerstrasse, 13, Wien, IX. The amount is 24 kronen, 25 francs, or 20 marks.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—A dinner of this association will be held at the Garden Club, Japan-British Exhibition, on Tuesday, July 19th, at 7.45. Tickets 7*s.* 6*d.* (not including wine). The annual meeting and banquet will be held at the Brussels Exhibition on Saturday, August 6th, at 7.30. Tickets 10 francs (not including wine). A seventeen day excursion return ticket viâ Dover and Ostend to Brussels by any train, including saloon on steamer, costs £2 8*s.* 4*d.* The agents are Messrs. Dean and Dawson, 84B, Piccadilly, W. The headquarters in Brussels during the meeting will be Wiltshire's Hotel, Boulevarde de Waterloo, where a book will be kept for the registration of members on their arrival. A party will leave London on Friday, August 5th, for Brussels. For further information application may be made to Dr. Arthur Haydon, honorary secretary of the Brussels Medical Graduates' Association, 23, Henrietta-street, Cavendish-square, W.

THE LOCAL GOVERNMENT BOARD AND CERTIFICATED DISPENSERS OF THE SOCIETY OF APOTHECARIES.—A question having recently been raised as to the eligibility of persons holding the assistants' or dispensers' certificate of the Society of Apothecaries to hold the office of dispenser under the Metropolitan Asylums Board under the existing regulations, the matter has been referred to the Local Government Board, which after consideration has informed the society that while the Board is of opinion that on a strict interpretation of the existing regulation a person holding the society's certificate would not be qualified, yet, as the qualification has been elsewhere recognised by the Local Government Board, it thinks it desirable that the regulations on the subject should be uniform, and accordingly proposes to issue an Order amending the existing Order so as to provide for the inclusion of the holders of the assistants' qualification among the classes of persons eligible for the office of dispensership under the Metropolitan Asylums Board. This recognition of their status by the Local Government Board has given general satisfaction to the large and increasing body of dispensers who hold the society's certificate.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Public Health in Scotland.

THE annual report of the Local Government Board for Scotland for 1909 has been published as a Parliamentary Blue-book. Questions affecting public health are alluded to in it at considerable length.

Sale of Margarine Bill.

Mr. KILBRIDE has introduced into the House of Commons a Bill "to make further provision to protect the public against the fraudulent sale of margarine, and to prevent margarine being made or sold in such a form as to facilitate its substitution for butter." It has been read a first time, and is backed by Captain DONELAN, Mr. COURTHORPE, Mr. CHARLES DUNCAN, Sir MARK STEWART, and Mr. HAZLETON.

Teaching of Hygiene in Schools.

Dr. ADDISON has given notice that at an early date in the House of Commons he will present a Bill to require that in public elementary schools instruction shall be given in hygiene, and, to girls, in the care and feeding of infants.

Indecent Advertisements.

Earl BEAUCHAMP, in speaking in the House of Lords on the Indecent Advertisements (Amendment) Bill, asked its promoters to put themselves into communication with the Home Office, with a view to consultation on a larger Bill which it was hoped to introduce. It appeared from the discussion that under the present law there are no adequate or summary means of suppressing entirely the publication in newspapers of advertisements relating to diseases of the generative organs and to drugs for preventing conception. The Bill, which aims at the suppression of these advertisements, has been read a second time, but the Government has intimated that its drafting will require careful scrutiny.

HOUSE OF COMMONS.

THURSDAY, JULY 7TH.

Bleached Flour.

Mr. LONSDALE asked the First Lord of the Admiralty whether he was aware that, as the result of bleaching flour with nitrogen peroxide, poisonous and deleterious ingredients were introduced; and whether, in the interests of the health of the men in the Navy, he would direct that flour bleached by this process should not be supplied for Navy purposes.—Mr. MCKENNA replied: The matter is receiving the attention of the Admiralty and the action taken will depend upon the result of the inquiries which are being instituted by the Local Government Board on the subject.

Mr. LONSDALE addressed a similar question with relation to flour used in the Army to the Secretary of State for War.—Mr. HALDANE answered: I have not received any reports of the flour supplied to the Army being treated in the manner referred to. The specification governing supply under contract requires that the flour shall be the produce of good, sound, sweet, and dry wheat without any adulteration whatever.

The Irish Prisons Board.

Mr. SCANLAN asked the Chief Secretary to the Lord Lieutenant of Ireland whether, in regard to the vacancy pending on the General Prisons Board (Ireland), in making the appointment to fill the same, recognition would be given to the desirability of filling the post by a medical man specially qualified in mental diseases, in view of the advantage experienced by the English Prisons Board from such expert knowledge.—Mr. BIRRELL wrote in reply: When the question of appointing a new medical member to the Prisons Board comes to be considered due weight will be given to the possession of a knowledge of mental diseases.

MONDAY, JULY 11TH.

The Certifying Surgeon for Govan.

Mr. WATT asked the Secretary of State for the Home Department whether it was proposed to divide the office of medical inspector of factories for the Govan Division of Lanarkshire, at present vacant by the death of the previous holder; and, if so, would he say into what districts the territory would be divided.—Mr. CHURCHILL replied: It is proposed to divide the district by adding Govan, which lies south of the river, to the district of the certifying surgeon of South Glasgow, which almost surrounds Govan on its other sides; and by adding the portion which lies north of the river (that is, Partick and part of the civil parish of Renfrew) to the adjoining district of the certifying surgeon for north-west Glasgow. The change is made in the interests of efficiency and convenience of administration.

Royal Military Infirmary, Dublin.

Mr. NANNETTI asked the Secretary of State for War whether the Royal Military Infirmary at Infirmary-road, Phœnix Park, Dublin, was about to be closed.—Mr. HALDANE answered: The building will cease to be used as a military hospital when the new hospital at Arbour Hill has been completed, but the building may be required for other military purposes.

TUESDAY, JULY 12TH.

Free Hospital Telephones in Glasgow.

Mr. WATT asked the Postmaster-General whether he was aware that the National Telephone Company had for years granted the free use of a telephone to each of the Glasgow infirmaries; whether the corporation of Glasgow, when owners of a telephone service, granted a similar privilege to these institutions; whether his department now proposed to charge rates which would be exceedingly onerous on the infirmaries; and whether, in view of the fact that the managers had difficulty in providing the funds for the carrying on of this philanthropic work, he would refrain from insisting on this charge until at least 1912, when the whole telephone system would be altered.—Mr. SAMUEL replied: I am aware that free telephone exchange lines were provided for certain hospitals by the corporation of Glasgow. The service was continued by the Post Office when the corporation telephone system was purchased in 1906. The arrangement gives rise to some legal difficulties, but in view of all the circumstances I have decided that it need not be disturbed for the present.

Medical Inspection of School Children in Ross-shire.

Mr. WEIR asked the Lord Advocate whether, having regard to the proposals relative to the medical inspection of school children, he was yet in a position to say how many medical inspectors would be appointed for the island of Lewis and Ross-shire respectively.—Mr. URE wrote in reply: The scheme for the medical inspection of school children which has been formulated by the Secondary Education Committee for Ross-shire and which has received the department's approval, provides for the present for the following staff: The medical officer of health of the county, a subordinate medical officer for the mainland section of the county, and a second subordinate medical officer for the Island of Lewis.

WEDNESDAY, JULY 13TH.

Unqualified Medical and Dental Practitioners.

Mr. MARSHALL HALL asked the Secretary of State for the Home Department whether, having regard to the report of the Coroners' Committee upon the use of anæsthetics and the decision of the Court of Appeal in Bellerby *v.* Heyworth, he would consider the advisability of at once introducing legislation to protect the interests of the public at the hands of unqualified medical and dental practitioners.—Mr. CHURCHILL replied: The recommendations of the Coroners' Committee are now under consideration, and I hope, when time permits, to propose legislation with regard to them. As regards the question of unqualified practitioners, I understand that in reply to a circular issued at the instance of the Local Government Boards of England, Scotland, and Ireland a large body of information has been collected from medical officers of health which will, it is hoped, be published at no distant date as a Parliamentary paper. When this information is available the Government will be in a better position to consider what action is desirable.

BOOKS, ETC., RECEIVED.

BRAUMÜLLER, WILHELM, Wien und Leipzig.
Handbuch der Aerztlichen Sachverständigen-Tätigkeit. Herausgegeben von professor Dr. Paul Dittrich, Prag. Siebenter Band, Erster Teil. Vergiftungen. Klinischer Teil. Zweite Hälfte. Die Organischen Gifte, Therapie, Semiotische Übersicht. Von Dr. Franz Erben. Price M.34, or K.40.80.

FISCHER, GUSTAV, Jena.
Funktionelle Behandlung der Skoliose. Nebst einem Beitrag zur Kenntnis einiger Orthogenetisch-degenerativer Krankheiten. Von Dr. Rudolf Klapp. Zweite umgearbeitete Auflage. Price, paper, M.4.50; bound, M.5.50.

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Sechste Lieferung. Band II. Physiologie des Stoffwechsels, Physiologie der Zeugung. Erste Hälfte. Price M.5.

Operative Chirurgie der Harnwege: Normale Anatomie und chirurgische pathologische Anatomie. Von J. Albarran. Ins Deutsche übertragen von Dr. Emil Grunert. Erste Lieferung. Price M.8.

Beiträge zur Pathologie des Stoffwechsels bei Psychosen. Dritter Teil: Funktionelle Psychosen. Von Dr. Max Kauffmann. Price M.7.

HIRSCHWALD, AUGUST, Berlin.

Atlas der Bösartigen Geschwülste. Von Prof. Dr. D. v. Hansemann, Geh. Medizinalrat. Price M.9.

Zur Transformation des Knochenkallus. Experimentelle Untersuchungen und ihre klinische Bedeutung. Von Dr. M. Zondek, Berlin. Price M.1.20.

Die Zuckerkrankheit und ihre Behandlung. Von Professor Dr. Carl von Noorden. Fünfte vermehrte und veränderte Auflage. Price M.10.

KABITZSCH, CURT (A. STUBER'S VERLAG), Würzburg.

Nahrungsmittel-Tabelle zur Aufstellung und Berechnung von Diätverordnungen. Für Krankenhaus und Praxis. Von Dr. Hermann Schall und Dr. August Heisler. Zweite, bedeutend vermehrte Auflage. Price M.2.50.

KARGER, S., Berlin.

Über sogennante angeborene und über frühzeitig erworbene Rachitis. Von Dr E. Wieland. Price M.7.

Leitfaden der Experimentellen Psychopathologie. Vorlesungen gehalten an der Universität Leipzig. Von Privatdozent Dr. Adalbert Gregor. Price, paper, M.5.60; bound, M.6.80.

Kritische Glossen eines Klinikers zur Radiologie des Magens. Von Prof. Dr. B. Stiller in Budapest. Price M.1.20.

Kurzgefasstes Lehrbuch der Kinderheilkunde für Aerzte and Studierende. Von Dr. Carl Seitz. Dritte, vermehrte und völlig umgearbeitete Auflage. Price, paper, M.13; bound M.14.60.

Jahrbuch für Kinderheilkunde und physische Erziehung. Unter Redaktion von O. Heubner und Th. Escherich. 71, der dritten Folge 21 Band. Heft 5. Ausgegeben am 1 Mai, 1910. Price not stated.

KLINKHARDT, Dr. WERNER, VERLAG VON, Leipzig.

Jahresbericht über die Fortschritte der inneren Medizin im In- und Auslande. Redaktion: Dr. Schrieber in Magdeburg und Dr. Rigler in Leipzig. Bericht über das Jahr 1908. III. Band. Price M.21.60.

Leitfäden der praktischen Medizin. Herausgegeben von Professor Dr. Ph. Bockenheimer. Berlin. Band I. Zahnärztliche Chirurgie. Von Prof. Dr. med. Fritz Williger. Price, paper, M. 4; bound, M.4.60.

MALOINE, A., Paris.

Un Nouveau Traitement du Tabes (Ataxie Locomotrice). Par le Docteur Helan Jaworski. Price Fr.3.50.

Les Appareils plâtrés. Par le Docteur Jean Privat. Préface du Dr. Calot. Price Fr.6.

Le Cancer. Par le Docteur Joseph Thomas. Préface du Professeur Albert Robin. Deuxième édition, revue et augmentée. Price not stated.

MARHOLD, CARL, Verlagsbuchhandlung, Halle a.S.

Anwendungsformen und Wirkungsweise der Hydrotherapie bei den Verdauungs- und Stoffwechselkrankheiten. Von Ernst Tobias. (Sammlung Albu. II. Band. Heft 5.) Price M.1.40

MASSON ET CIE, Paris.

Manuel des Maladies du Foie et des Voies Biliaires. Sous la direction de MM. G. M. Debove, Ch. Achard, et J. Castaigne. Par J. Castaigne et M. Chiray. Price Fr.20.

SPRINGER, JULIUS, Berlin.

Die Praxis der Hydrotherapie und verwandter Heilmethoden. Ein Lehrbuch für Aerzte und Studierende. Von Dr. A. Laqueur. Price, paper. M.8; bound, M.9.

STABILIMENTO TIPOGRAFICO VIRZI, Palermo.

Annali della Clinica delle Malattie Mentali e Nervose della R. Universita di Palermo. Diretta dal Prof. Dr. Rosolino Colella. Volume III. 1909. Price not stated.

URBAN UND SCHWARZENBERG, Berlin und Wien.

Chirurgische Operationslehre für Studierende und Aerzte. Von Prof. Dr. Friedrich Pels-Leusden. Price, paper, M.18; bound, M.20.

VEIT UND COMP., VERLAG VON, Leipzig.

Das Elektrokardiogramm des gesunden und kranken Menschen. Von Prof. Dr. Friedrich Kraus und Prof. Dr. Georg Nicolai. Price M.12.

VOGEL, F. C. W., Leipzig.

Archiv für Experimentelle Pathologie und Pharmakologie. Redigirt von Dr. B. Naunyn und Dr. O. Schmiedeberg. 62 Band. 6 Heft. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CLEMINSON, F. J., B.C. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon at University College Hospital.

DAVIES, TREVOR B., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Obstetric Assistant to University College Hospital.

DAY, H. B., M.D., B.S. Lond., M.R.C.P. Lond., has been appointed Professor of Clinical Medicine at the Egyptian Government School of Medicine and Physician to the Kasr-el-Ainy Hospital, Cairo.

HUMPHRYS, C. B., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Clevedon District of the county of Somerset.

JOHNSTON, W. A., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Eskdale District of the county of Cumberland.

JOLL, CECIL A., M.B., B.S. Lond., F.R.C.S. Eng., L.R.C.P. Lond., L.D.S. Eng., has been appointed House Surgeon at the Leicester Infirmary.

MAMOURIAN, MARCUS, M.B., Ch.B. Edin., has been appointed Honorary Assistant Surgeon to the District Infirmary and Children's Hospital, Ashton-under-Lyne.

SCROGGIE, F. H., M.B., Ch.B. St. And., has been appointed Resident Medical Officer at King's Cross Hospital, Dundee.

SIMPSON, MARIE, M.B., M.S. Lond., has been appointed Resident House Surgeon at the Victoria Hospital, Worksop.

STEADMAN, F. ST. J., M.R.C.S., L.R.C.P. Lond., L.D.S., has been appointed Honorary Dental Surgeon to the Belgrave Hospital for Children.

THOMAS, E. FAIRFIELD, M.D. Brux., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Medical Officer to the new Tuberculosis Dispensary at Cardiff.

WILSON, THOMAS, M.D. Lond., Ch.M. Birm., F.R.C.S. Eng., has been appointed Lecturer in Midwifery and Diseases of Women in the University of Birmingham.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BLACKBURN, COUNTY FEVER HOSPITAL.—Resident Medical Officer and Assistant Medical Officer of Health, unmarried. Salary £100 per annum, with board and lodging.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £100 per annum.

BRISTOL ROYAL INFIRMARY.—Honorary Medical Registrar.

BRISTOL UNIVERSITY.—Demonstrator of Dental Histology.

BURY INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

CANCER HOSPITAL, Fulham-road, London, S.W.—Surgeon.

CAPETOWN, SOMERSET HOSPITAL.—Assistant Medical Officer. Salary £200 per annum, with rations and quarters.

CLAPHAM MATERNITY HOSPITAL, London.—Female Junior Resident Medical Officer for six months.

CROYDON GENERAL HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board, laundry, and residence.

DOUGLAS, NOBLE'S ISLE OF MAN HOSPITAL AND DISPENSARY.—Resident House Surgeon, unmarried. Salary £90 per annum, with board and washing.

DOVER, ROYAL VICTORIA HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

EAST BENGAL, BAPTIST MISSIONARY SOCIETY MISSION HOSPITAL.—Locum Tenens, unmarried. Salary £150 per annum, house accommodation, &c.

ENNISKILLEN, FERMANAGH COUNTY HOSPITAL.—House Surgeon. Salary £72 per annum.

FRIMLEY, BROMPTON HOSPITAL SANATORIUM.—Assistant Resident Medical Officer. Salary £150 per annum, with board and residence.

GLASGOW SCHOOL BOARD.—Assistant Medical Officer (female). Salary £250 per annum.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, residence, and laundry.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with rooms, board, and washing.

HEMEL HEMPSTEAD, HERTS, WEST HERTS HOSPITAL.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Second Resident Medical Officer, unmarried. Salary £50 per annum, with board and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Dental Surgeon. Salary 50 guineas per annum. Also House Physician for six months. Salary 30 guineas.

HUNTINGDON COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

KING'S COLLEGE HOSPITAL.—Assistant Pathologist. Salary £200 per annum.

LABORATORIES OF PATHOLOGY AND PUBLIC HEALTH.—Assistant Clinical Pathologist.

LEEDS UNION.—Assistant Medical Officer (female). Salary £100 per annum, with board, washing, apartments, &c.

LINCOLN GENERAL DISPENSARY.—Resident Junior Medical Officer, unmarried. Salary £175 per annum, with apartments, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Resident Medical Officer. Salary £120 per annum, with board, residence, and washing. Also Assistant House Surgeon for six months. Salary at rate of 100 guineas per annum.

MANCHESTER CHILDREN'S HOSPITAL, Gartside-street, Manchester.—Assistant Medical Officer for six months. Salary £100 per annum.

MANCHESTER EAR HOSPITAL.—Assistant Anæsthetist.

MANCHESTER ROYAL INFIRMARY.—House Surgeon for six months. Salary £100 per annum, with board and residence.

METROPOLITAN ASYLUMS BOARD, London.—Assistant Bacteriologist. Salary £300 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Also Assistant House Physician. Salary in each case £100 per annum, with board, lodging, and washing.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Honorary Dental Surgeon.

PARISH OF ST. GILES INFIRMARY, Brunswick-square, Camberwell.—Assistant Medical Officer. Salary £120 per annum, with apartments, board, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £130 per annum, with board, lodging, and washing.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen Commissions.

SALISBURY GENERAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and lodging. Also Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and lodging.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Assistant Medical Registrar for six months.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon and Assistant House Physician, unmarried. Salary £50 each per annum, with board, lodging, and washing. Also Casualty Officer. Salary £80 per annum.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.

SOUTHWARK UNION, London.—Medical Officer for the Nos. 1 and 2 bined District. Salary at rate of £130 per annum.

STAMFORD, RUTLAND, AND GENERAL INFIRMARY AND FEVER HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, lodging, and washing.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, and residence.

SURREY COUNTY COUNCIL.—Assistant Medical Officer. Salary £250 per annum.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, &c.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician.

WIVELISCOMBE DISPENSARY.—Medical Officer. Salary £50 per annum, with house, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Tewkesbury, in the counties of Gloucester and Worcester; and at Youlgreave, in the county of Derby.

Births, Marriages, and Deaths.

BIRTHS.

GIBBS.—On July 9th, at Bear-street, Barnstaple, North Devon, the wife of Stanley Rider Gibbs, M.R.C.S., L.R.C.P., of a son.

MURIEL.—On July 10th, at Scotch-street, Whitehaven, the wife of G. Bertram Muriel, B.A., M.B., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., of a son.

WATSON.—On July 7th, at the Central Nursing Home, Aberdeen, the wife of Cecil F. Watson, M.R.C.S., L.R.C.P., Zunguru, Northern Nigeria, of a son.

MARRIAGES.

LUCAS—WILLCOCKS.—On July 13th, 1910, at All Saints' Church, Paston, Northants, by the Rev. F. W. Robinson, M.A. Oxon., Geoffrey Lucas, B.A. Cantab., L.S.A. Lond., of Nordrach-on-Dee, Banchory, N.B., youngest son of Arthur Lucas of Croft Moor, Bournemouth, to Catherine, eldest daughter of Mr. and Mrs. G. C. Willcocks of Wynberg, New Farm, Brisbane.

RAMSBOTHAM—BARTLETT.—On July 7th, at St. Mary's Church, Westerham, Henry Robert Ramsbotham, M.B., B.Ch. Oxon., to Ethel Madeline, youngest daughter of the late Rev. Henry Charles Bartlett and of Mrs. Bartlett, Farley Croft, Westerham.

SWEETING—STOKER.—On July 12th, at St. Andrew's, Ashley-gardens, S.W., by the Rev. T. H. Cardwell, Rector of St. Anne's, Soho, assisted by the Rev. and Hon. J. Stafford Northcote, Vicar of the parish, Neelie, younger daughter of Dr. R. Deane Sweeting of Ivernagardens, Kensington, to Noël Thornley, only child of Bram Stoker, Esq., of Durham-place, Chelsea.

WOODYATT—LARDER.—On July 2nd, at St. Laurence, Upminster, William Jeffery Woodyatt, M.B., Ch.B., to Phyllis Mary, elder daughter of Herbert Larder, M.R.C.S.

DEATHS.

BELL.—On July 8th, at Madeira Hall, Ventnor, Isle of Wight, John Hougham Bell, M.D., aged 64 years.

HEARNDEN.—On July 6th, suddenly, at The Shrubbery, Mulgrave-road, Sutton, Surrey, William Frank Hearnden, M.R.C.S.E., L.S.A., in his 54th year.

KERSHAW.—On July 11th, at Grosvenor-street, Chorlton-on-Medlock, Manchester, Joseph Kershaw, M.R.C.S., L.S.A., in his 80th year.

ROUS.—On July 12th, 1910, at Westgate-on-Sea, John Bart Rous, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond.

SPENCER.—At the American Hospital, City of Mexico, Walter Spencer, M.D. Brux., L.R.C.P. Edin., M.R.C.S. Eng., L.S.A., late of Sydney, Australia.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SEVILLE AND ALGECIRAS.

Mr. Arthur Keyser, British Consul at Seville, reports that in the summer of 1909 there was an outbreak of typhus fever in that city and many of the richer people left. Visitors were few and much loss was caused to hotels and tradespeople. The epidemic, however, was never really serious and soon died away; but until the proper drainage of the town is undertaken in earnest and remodelled on modern lines Seville cannot be safely recommended as a health resort, although its climate during nine months in the year is one of the best in the world. The limited supply of water is a very serious matter, especially in the great heat of the summer months.

In his annual report on Algeciras Mr. Vice-Consul W. James Smith states that a casino is being built which will be completed by the end of this year. It will meet a much-felt want in this winter resort, as visitors, who praise the climate and the scenery, all complain of the absence of amusements. With good roads, good lighting, an abundant supply of pure spring water, and a casino, Algeciras now promises to become a winter health and pleasure centre of considerable importance—in fact, the San Sebastian of the South; and visitors will be attracted from the North of Spain, the United Kingdom, and France, the climate being far milder than that of the Riviera. More hotels, however, are wanted; at present there is only one that is really suitable for persons in search of health and pleasure. The bridge over the River Palmones is to be completed at once, so that there will be an excellent road between Algeciras and San Roque, from which town the road to Malaga is also in course of construction.

THE TREATMENT OF RUPTURE OF THE CALF MUSCLES.

To the Editor of THE LANCET.

SIR,—I have read with interest in THE LANCET of July 9th "A Note on the Treatment of Rupture of the Calf Muscles" by Dr. L. A. Hawkes. I venture to think, however, that what he has really suffered from has been a rupture of the plantaris muscle, a not uncommon accident, and one which is most apt to occur in those at middle or advanced life who, having allowed themselves to get more or less out of training, suddenly take a spurt of exercise (e.g.) by indulging in a game of, say, lawn tennis. The symptoms are exactly as those described by Dr. Hawkes—namely, a sharp pain in the calf, as if it had been sharply struck with a stone or stick.

As regards treatment, it is certainly advisable, and in the majority of cases absolutely necessary, that the patient should lie up. The leg should be elevated and may with advantage be massaged daily. The pain—which is usually severe at first—may be treated with hot fomentations, and wet dressings of lead and opium lotion will be found very soothing. A back splint or the application of a plaster-of-Paris case is, in my opinion, unnecessary and not calculated to add to the patient's comfort—rather the reverse. In the convalescent stage, when the patient is getting about, a Martin's rubber bandage may be worn with advantage for a short period.

As regards antiphlogistine, its application may divert and amuse the patient, and to those gifted with a lively imagination it may seem to do good, but my personal experience is that it is utterly useless. In conclusion, I congratulate Dr. Hawkes in having got over his accident without having to lie up; but I must agree with his professional friends that it was unwise not to do so, and surely he would not advocate his own method of treatment to be followed by others?

I am, Sir, yours faithfully,

Edinburgh, July 10th, 1910. B. R. CRAIG CHRISTIE, M.D. Edin.

To the Editor of THE LANCET.

SIR,—My experience in just such a rupture of the calf muscles as Dr. Hawkes described in THE LANCET of July 9th, p. 100, confirms his views. Stepping from higher to lower ground on the golf course I felt exactly the pain that is described by Dr. Hawkes, and the symptoms which followed were similar. I am glad to say that my medical man allowed me after a few hours to go about the house and, supported by a bandage, to attend to my business. The limb was regularly massaged for a fortnight, and, although a certain amount of pain and difficulty in walking were present for three weeks, complete cure was established by that time. I am, Sir, yours faithfully,

July 12th, 1910. M.D.

CONCERNING APPENDICITIS.

CONTROVERSY as to the etiology, immediate or remote, of this disease has evoked another suggestion as to its "cause"—this time from Italy, where a woman who had undergone operation for appendicitis was found to have ingested a considerable number of "scheggi" (minute fragments) of enamel as employed in glazing saucepans. These utensils, of German manufacture, are now in universal use all over Europe, including the British Isles, and owe their popularity to their

lightness and cheapness, their enamel being no thinner, indeed, than glass, but quite as brittle and equally sharp-edged when broken. If a saucepan falls or collides roughly with another article the enamel breaks, or resolves itself into chips, which get easily mixed with the food cooked in it. This is bad enough when edibles are boiled, but when they are stewed (after being braised with fried butter below the meat) the enamel gets easily detached, mingles with the food, and (as in the case of the Italian patient referred to) may find its way into the cæcum, causing irritation and the sequelæ for which she had to undergo operation. In cookery books, British as well as continental, the recipe, "to be cooked in an enamelled pan," is of universal occurrence, the enamel after a few days' use getting broken or chipped, and so swallowed with the food cooked in it. One Italian authority urges all housewives to "keep a vigilant look-out on the state of their saucepans, and if any one is at all damaged, to consign it at once to the dustman." Certainly nowhere more than in Italy has appendicitis increased, ever since (to quote the Italian authority again) "the good porcelain-lined English saucepans (which are not to be had now) have been replaced by the pretty, clean-looking, cheap German ones, with their extremely brittle enamel so easily resolving itself into chips and becoming a constant and effective source of intestinal irritation."

WORKMEN'S COMPENSATION ACT: THE LOCUM-TENENT QUESTION.

To the Editor of THE LANCET.

SIR,—Noticing an inquiry from Dr. Stanley Yeoman in your last issue as to the premium to be paid for the insurance of a locum-tenent, may I inform him and others, to whom, no doubt, the point is an important one, that 10*s.* is a very excessive premium. Having in the course of my business to engage over 800 locum-tenents per annum (most of whom I insure for principals) I have made special arrangements with an insurance company of undoubted repute and stability to cover all risks under the Workmen's Compensation Act, as regards the locum-tenents, for an annual premium of 3*s.*, and this covers any reasonable number of temporary engagements during one year. The premium for a permanent assistant is only 7*s.* 6*d.* irrespective of the salary paid.

I am, Sir, yours faithfully,

London, W.C., July 11th, 1910. PERCIVAL TURNER.

WANTED, A STANDARD FOR TEA.

To the Editor of THE LANCET.

SIR,—Dr. J. C. McWalter in THE LANCET of July 9th apparently values tea according to its caffeine content. Caffeine is his standard. In that case his want is already supplied. Practically speaking, all tea contains the same amount of caffeine, say a minimum of 3·5 per cent., and a maximum of 4·0 per cent. There are rarely any great variations from these figures. Dr. McWalter will bear in mind that, although he may rely upon this statement, tannin is chemically opposed to caffeine. Perhaps as caffeine is a fairly constant figure and tannin is a variable one, the standard which he asks for might with greater scientific reason be based upon a minimum of the latter constituent.

I am, Sir, yours faithfully,

July 9th, 1910. SIMPLES.

M.B., C.M.—The rates are actually higher than some which have been submitted to us, and there is, unfortunately, no uniformity in such matters. If our correspondent will send us a copy of his contract we will consider the matter closely.

Mr. C. Smith.—We cannot find that any cases of similar mischief have been attributed to the eating of bananas, and it seems doubtful whether our correspondent's injury was due to this cause.

Mr. E. H. Worth.—We have no particular information upon the subject, but our correspondent will find a letter bearing upon his question in another column.

F.R.C.S., offering 5 guineas annually, is asked to send his name in confidence.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

CONGRESSES are now getting so numerous that we have thought that a diary like the one printed below might be of service to our readers. With that idea we shall repeat it occasionally, with any necessary additions or subtractions. The following Congresses, Conferences, and Exhibitions are announced for 1910:—

July 18th–23rd (Birkenhead).—Royal Institute of Public Health.
,, 26th–29th (London).—British Medical Association.
,, 26th–29th (Cambridge).—Pharmaceutical Congress.
August 1st–7th (Brussels and Liège).—Congress of French-speaking Psychiatrists and Neurologists.
,, 2nd–7th (Paris).—Third International Congress on School Hygiene.
,, 4th–10th (Brussels).—International Congress of Legal Medicine.
,, 21st–26th (Brussels).—International Home Education Congress.
August 31st (Sheffield).—British Association for the Advancement of Science.
Sept. 10th–14th (Brussels).—Second International Congress on Occupational Diseases.
,, 13th–15th (Brussels).—International Congress on Radiology and Electricity.
,, 22nd–27th (Toulouse).—Sixth French Congress of Gynæcology, Obstetrics, and Pædiatrics.
,, 22nd–28th (St. Petersburg).—Fifth International Congress of Obstetrics and Gynæcology.
,, 27th–30th (Vienna).—Eighth International Physiological Congress.
Oct. 1st–5th (Paris).—Second International Conference for the Study of Cancer.
,, 3rd–7th (London).—Sixth London Medical Exhibition.
,, 3rd–7th (Berlin).—International Congress on the Care of the Insane.
,, 4th–8th (Brussels).—Second International Congress of Alimentary Hygiene.
,, 13th–15th (Paris).—Eleventh French Congress of Medicine.
,, 16th–22nd (Barcelona).—First International Spanish Congress of Tuberculosis.

In 1911:—
May–October (Dresden).—International Hygiene Exhibition.
August or September (Berlin).—Third International Laryngo-Rhinological Congress.
September (Brussels).—Exhibition of Fractures.
October (Cologne).—International Congress of Criminal Anthropology.

In 1912:—
September (Washington, D.C.).—Fifteenth International Congress of Hygiene and Demography.

In 1913 the only fixture so far is in London, where the Seventeenth International Congress of Medicine will take place.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. W. FOX: Clinique (Skin). 5.15 P.M., Lecture:—Dr. J. L. Bunch: Skin Rashes and their Treatment.
TUESDAY.—4 P.M., Dr. C. Riviere: Clinique (Medical). 5.15 P.M. Lecture:—Dr. T. D. Lister: Prognosis in Phthisis Pulmonalis.
WEDNESDAY.—4 P.M., Mr. T. Walker: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. A. Lane: Intestinal Stasis.
THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Museum Demonstration. 5.15 P.M., Dr. R. A. Gibbons: Sterility, its Etiology and Treatment.
FRIDAY.—4 P.M., Dr. G. S. Hett: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Edwards: Rectal Surgery.
TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 11.30 A.M., Demonstrations in Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Elliot: The Acute Abdomen, with Special Reference to Diagnosis.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M. Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. Howell Evans), 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson).
TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations. Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Dr. A. H. Pirie).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappell).
FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

MONDAY.—5.15 P.M., Dr. A. Voelcker: Diseases of the Chest in Children, illustrated by cases, specimens, skiagrams, and drawings. (Lecture III.). (Post-graduate Course.)

TUESDAY.—5 P.M., Mr. H. G. T. Fairbank: Deformities, illustrated by cases, specimens, skiagrams, and sketches. (Lecture III.). (Post-graduate Course).

WEDNESDAY.—5.15 P.M., Dr. A. Voelcker: Diseases of the Chest in Children, illustrated by cases, specimens, skiagrams, and drawings. (Lecture IV.). (Post-Graduate Course.)

THURSDAY.—4 P.M., Lecture:—Dr. Thursfield: Meningococcal Meningitis.—5 P.M., Mr. H. G. T. Fairbank: Deformities, illustrated by cases, specimens, skiagrams, and sketches. (Lecture II.). (Post-graduate Course).

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.),

TUESDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (20th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (21st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (23rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

The Index and Title-page to Vol. I. of 1910, which was completed with the issue of June 25th, were given in THE LANCET of July 2nd.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 13th, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 7	29·97	N.	0·02	85	61	54	53	57	Cloudy
,, 8	30·01	N.	0·08	89	63	53	54	56	Cloudy
,, 9	30·03	N.E.	...	80	60	54	53	55	Overcast
,, 10	30·00	N.E.	...	67	58	53	54	56	Overcast
,, 11	30·03	N.E.	...	119	68	52	54	57	Overcast
,, 12	30·09	N.E.	...	120	71	54	54	56	Fine
,, 13	30·17	E.	...	109	70	55	54	56	Overcast

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